

## HACK OF THE MONTH

Vendors' sloppy messaging defaults open the door to system attacks. Page 59

## NEW BUS STOP

QuickStudy: Get off the parallel and serial port bus technology and start riding USB. Page 62

## EASING Y2K FEARS

Are you ready to handle a flood of year 2000 customer calls? Page 46

# COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS ■ WWW.COMPUTERWORLD.COM

AUGUST 23, 1999 ■ VOL. 33 ■ NO. 34 ■ \$4 COPY

## NET PATENTS STIR DEBATE

*Critics say established ways of doing business granted protection in cyberspace*

BY JULIA KING

In the mad race to make big bucks online, thousands of companies are making a pit stop at the U.S. Patent and Trademark Office. What they want is monopoly protection for their proposed Internet innovations.

And they're frequently getting it — even for familiar ways of doing business that critics claim aren't really new or novel. The only thing different is that they occur in cyberspace.

"They're issuing crap at the speed of light," said San Francisco-based patent researcher and consultant Greg Aharon-



HOME ACCOUNT  
CEO Chuck  
White defends  
its patents

ian, referring to the Patent and Trademark Office's 1998 issuance of 125 patents for supposedly new ways of doing business on the Internet. This year, the Patent Office expects

to issue as many as 200 more such patents.

"It's not that hard to move anything you do on paper to a computer. The fundamental question is whether that's a really innovative thing," Aharonian said.

A prime example is Priceline.com Inc. in

Stamford, Conn., which secured a patent for so-called reverse auctions. That's where

*Patents, page 81*

## JAVA FUELS HOME DEPOT EXPANSION

*Retailer pilots catalog, order-entry applications*

BY CRAIG STEDMAN

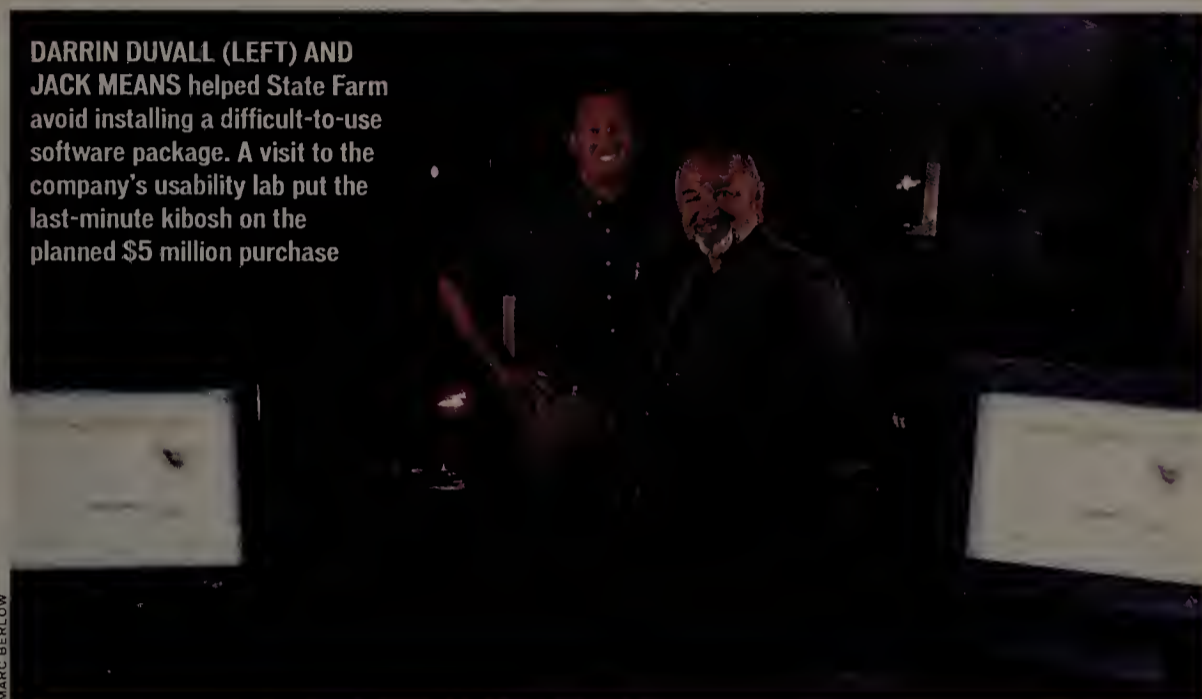
The Home Depot Inc. is starting to roll out Java-based applications to help run an emerging line of interior-design showrooms that's due for rapid expansion as a companion

business to the company's flagship retail stores.

The Atlanta-based home-improvement chain this month began piloting an electronic product catalog and order-entry system that it developed for the Expo Design Center showrooms. That follows the June launch of another application that employees in the new stores will use to track the progress of home-improvement projects they're coordinating for customers.

*Home Depot, page 81*

DARRIN DUVAL (LEFT) AND JACK MEANS helped State Farm avoid installing a difficult-to-use software package. A visit to the company's usability lab put the last-minute kibosh on the planned \$5 million purchase



MARC BERLOW

## GETTING TOUGH ON EASE OF USE

### SOFTWARE USABILITY

Very quietly, a group of corporate IT managers is plotting to exploit its buying power and finally take a stand on software usability. They're tired of productivity-sapping software packages that end users can't figure out, reports David Orenstein. So next month, IT managers from State Farm, Boeing, Fidelity, Kodak and Northwest Mutual will gather to test what they hope will become a standard way to assess software usability — before they buy.

*Report starts on page 64.*

## MCI OUTAGE COMPENSATION DERIDED

*Users: 'Token gesture' won't cover losses*

BY CAROL SLIWA

MCI WorldCom Inc. executives last week offered 20 days of free service to up to 3,000 corporate customers affected by its 10-day frame-relay network problems.

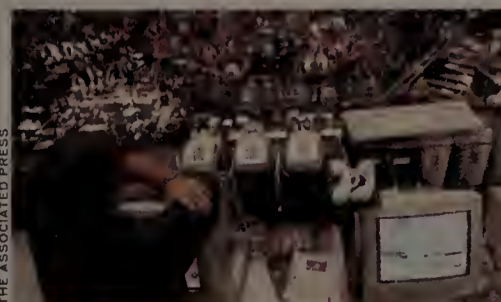
But many customers said they view the two-for-one offer as a token gesture that won't begin to offset the actual losses they suffered when their

networks failed or experienced sporadic outages between Aug. 5 and Aug. 15.

"It's a shallow way of an-

swering this problem," said Rod Taitano, wide-area network manager at San Francisco-based State Compensation Insurance Fund, which intermittently lost its frame-relay connection to 14 of its 28 district offices during the outage.

"We have not accepted that [two-for-one] offer, and we are still reviewing our avenues of legal recourse," said Katherine Spring, a spokeswoman for the Chicago Board of Trade MCI, page 16



TRADING AT CBOT was disrupted repeatedly by MCI's frame-relay outages two weeks ago

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## THE CLASS OF 1999

If the grads we visited with are any indication, employers will find imagination, drive, dedication and know-how in this new crop of IT staffers. Page 50



## BACK-TO-SCHOOL MARKET

A few companies are using the Web to make money by relieving parents of the stress of getting kids ready for school. Page 40

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AUGUST 23, 1999

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- 4 WHITE HOUSE PROPOSES** bill to let cops nab encryption keys; opponents call it unconstitutional.
- 6 MICROSOFT PROMISES** industrial-strength version of Win 2000; users are skeptical.
- 8 BANKS LEAP** at chance to switch to electronic statements; feds promise more oversight of electronic banking.
- 10 IBM AIMS** to ease desktop management with PCs preloaded with remote administration tools.
- 12 DATA MINERS** are scarce, but training your own can work better than hiring based on credentials.
- 14 WEB MAY REVAMP** construction industry as portals, broadband ease data-sharing.
- 16 FEDERAL Y2K GURU** moves to private sector, offering tips on what SSA learned from fixes.
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- 33 MCI OUTAGE** shows you're risking your business if you don't have backup networking plans, Dan Gillmor warns.
- 34 CRM FAILS** when companies rely on it to ensure service, Martin Butler writes.

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- 38 OVERNIGHT DELIVERY** faces competition from electronic document delivery.
- 39 OFF-LINE** personalization is helping some retailers increase sales to existing customers.
- 39 FRAUD DATABASE** helps insurance companies cut losses from scofflaws.
- 40 BACK-TO-SCHOOL** hits the Web, as retailers focus on seasonal sales opportunity.
- 44 ERP MUST** get simpler if it's going to have the impact users hope, Jim Champy writes.
- 46 WORRIED CUSTOMERS** are a big Y2K threat for most businesses; is yours ready?
- 48 CRM? ERM? PRM?** Despite all those letters, it's the same thing, the Jargon Judge rules.
- 50 NEW FACES SHOW** lots of promise for IT, but competition for them is fierce.
- 52 BUSINESS QUICKSTUDY:** Letting vendors manage your inventory can cut costs and time to market.
- 53 WORKING AT NASA** means sushi for lunch, luaus and astronauts. But there's plenty of hard work, too.
- 53 CAREER ADVISER** counsels reader on how to focus a motley work history.

## TECHNOLOGY

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- SOFTWARE**
- 56 RAYOVAC'S RAPID R/3** implementation is considered a success — so far.
- 56 MICROSOFT EXCHANGE** outsells Lotus Notes in the first half of this year.
- HARDWARE**
- 58 START-UP** Trade.com passes on Unix, gambles on thin servers running Windows NT.
- 58 IBM INTRODUCES** 1 GHz chip for AS/400 and RS/6000.
- NETWORKS**
- 59 SLOPPY** vendor defaults may open door to multitude of network attacks.
- 59 ONE COMPANY** uses a new breed of security tools to shut down an attacker.
- 60 EMERGING COMPANIES:** Avaterra.com believes virtual business-to-business worlds can inspire user loyalty.
- 61 EXEC TECH:** We test digital voice recorders from Dragon Systems and Olympus America.
- 62 QUICKSTUDY:** We define and explain the Universal Serial Bus.
- 64 USERS, VENDORS** work on a standard way to assess software ease of use.
- 66 JUST GETTING** sound files into a presentation is still too difficult.
- 68 FLASHBACK:** In 1982, TCP/IP changed the landscape.

THEY'RE  
ISSUING  
CRAP  
AT THE  
SPEED  
OF LIGHT.

GREG AHARONIAN,  
PATENT RESEARCHER  
AND CONSULTANT,  
REFERRING TO THE U.S. PATENT  
AND TRADEMARK OFFICE'S  
1998 ISSUANCE OF 125 PATENTS  
FOR SUPPOSEDLY NEW WAYS  
OF DOING BUSINESS ON THE INTERNET.  
SEE PAGE 1.

## AT DEADLINE

## ICANN Gets Funding

The cash-strapped Internet Corporation for Assigned Names and Numbers (ICANN) has secured at least \$600,000 to stay in operation, an ICANN spokesman said last week. MCI WorldCom Inc. is one of several companies that will fund the nonprofit organization, which is meeting next week in Santiago, Chile, the spokesman confirmed.

## Browsing Stations

BP Amoco PLC plans to test Internet-equipped gas pumps designed to let customers book hotel reservations, download directions and access other online functions while they fill their tanks. The \$84 billion oil giant signed a three-year contract for the new Web browser-equipped pumps with Fort Wayne, Ind.-based Tokheim Corp.

## Visa Tally May Rise

Sen. John McCain (R-Ariz.) said last week that he would introduce a bill to increase the maximum number of H-1B visas to 175,000 annually. This year, the visas for skilled foreign-born workers - currently capped at 115,000 - had all been applied for by the end of June.

## IT Workers Studied

Congress has asked the National Research Council to begin a study of the information technology workforce to set some guidelines for immigration and career issues. More information is available at [www.nationalacademies.org](http://www.nationalacademies.org).

## A Naval Attack

A preliminary U.S. Navy report warning of year 2000 failures at some gas, electric and water companies has prompted reactions of shock and surprise from some of the companies targeted as likely to face Y2K-related failures. The Orlando Utilities Commission - one of the utilities the Navy said would face problems - said the Navy inquired about its Y2K readiness in January and hadn't called back since. Orlando officials, who said they weren't expecting problems, said they were shocked by the Navy's assessment.

# Government Proposes New Cryptography Bill

## Would let agencies access encryption keys

BY ANN HARRISON

**T**HE CLINTON administration has drafted a bill that would give law enforcement

agencies access to encryption keys to decrypt information they suspect is related to a crime. But critics contend that the proposed legislation violates constitutional rights and might be unenforceable.

Opponents also fear that law enforcement officials could inadvertently modify or destroy a company's files as they recover encrypted information.

The drafting of the Cyberspace Electronic Security Act is being led by the Office of Management and Budget and

the U.S. Department of Justice. It would give officials the ability to use a search warrant or court order to access keys needed to decrypt information. Information technology departments that hold employees' keys for data recovery would be forced to comply with these requests.

Although a draft of the bill noted that encryption is an important tool for protecting the privacy of legitimate communications and stored data, it also argued that the technology could be used to facilitate and hide unlawful activity.

That argument has been used to support other legislative initiatives such as the export controls on strong en-

ryption. "This is just one in a long line [of government attempts at regulating encryption]. The government hates all aspects of life that could remain private," said David Banisar, a senior fellow at the Washington-based Electronic Privacy Information Center.

Banisar added that key recovery provisions were also recently added to the Security and Freedom Through Encryption Act, which is pending in the U.S. House of Representatives.

### Problems With the Plan

The Cyberspace Electronic Security Act proposes that law enforcement officials have access to decryption keys held by a third party. Although this is a strategy increasingly favored by companies that want access to their employees' data en-

rypted with a company-issued key, it's unlikely that criminals would deposit their keys with third parties. The act would, however, allow officials to also use search warrants to access decryption keys not held by third parties.

Another problem with the bill is that it could punish people who simply lose their keys, such as through a hard disk crash, said Andy Neff, chief scientist at VoteHere Inc., a Kirkland, Wash.-based company that's developing systems for online voting.

"How do you prove that somebody didn't, through no fault of their own, simply lose their key as opposed to refusing to turn it over?" said Neff, who attended Crypto '99, an international conference on cryptology in Santa Barbara, Calif., last week. ▀

## Cryptographers Urge Review of Standard

### Seek help choosing between algorithms

BY ANN HARRISON

Cryptographers at Crypto '99, the 19th annual international conference on cryptology, last week urged businesses and other users of encryption to help select the next Advanced Encryption Standard (AES).

The cryptographers pointed out that the AES will perform encryption tasks in a wide range of current and future applications involving 32-bit microprocessors, 64-bit microprocessors, 8-bit smart cards and other devices.

"It is a standard developed by cryptographers, with impact far outside cryptography," said Bruce Schneier, founder and chief technology officer of Counterpane Internet Security Inc. in Minneapolis and co-developer of the Twofish algorithm, which was selected as one of the AES finalists.

The National Institute of Standards and Technology

### Encryption Users' Opinions Wanted

Cryptographers urged encryption users to review the report "AES Round 2 Finalists" on the selection of the algorithms and submit their own critiques.

The report can be found at <http://csrc.nist.gov/encryption/aes/round2/round2.htm>. Comments on the algorithms must be submitted to [www.nist.gov/aes](http://www.nist.gov/aes) by May 15.

(NIST) is soliciting comments on the five encryption algorithms chosen earlier this month as AES finalists. The algorithm selected will replace the weak Data Encryption Standard, which was adopted in 1977 and was once used widely by businesses and government agencies. The NIST report on the algorithms is posted on the Web (see box).

Attendees of the conference held at the University of California at Santa Barbara didn't expect that major weaknesses would be found in the algo-

Other businesses - especially financial institutions, which make the widest commercial use of encryption algorithms - should evaluate the finalists, said Crypto '99 attendee David Aucsmith, chief security architect at Intel. "In order to get the very best [Advanced Encryption Standard] we can, it should reflect the widest usage base," he said. - Ann Harrison


gorithms. Instead, they said the AES will be chosen based on its performance, flexibility and ability to satisfy the encryption needs of businesses and other users.

"When AES becomes a standard, customers will want their encryption products to be 'buzzword-compliant,'" Schneier said, meaning that the algorithm will be used as a marketing term to prove that devices are compliant and interoperable with the standard. "They'll demand it in hardware, in desktop computer

software, on smart cards, in electronic-commerce terminals and other places we never thought it would be used. Anything we pick for AES has to work in all these applications."

David Aucsmith, chief security architect at Intel Corp. and an attendee at Crypto '99, said he was impressed by the process for selecting the AES. He said Intel has been evaluating the performance and stability of the algorithms, ranking them relative to each other for Intel's upcoming 64-bit Merced chip. "It's always a trade-off," he said. "Should it be optimized for Pentium IIIs and Merced or smart cards?"

He noted that the AES will be either a compromise algorithm that runs on high-end and low-end systems or two algorithms that are optimal for each. If two are selected, Aucsmith said, manufacturers would have to build devices compliant with each algorithm - a strategy he doesn't support. After NIST proposes a standard next year, it will go through a formal government approval process and become a Federal Information Processing Standard for many international applications in 2001. ▀



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# Microsoft Tightens Developer Testing Rules for Win 2000

## Aims to allay users' reliability fears

BY DAVID ORENSTEIN  
AND SHARON GAUDIN

Microsoft Corp. wants software and device driver vendors to write code that's well tuned and tested so that Windows 2000 — under a lot of pressure to be stable — doesn't fall victim to third-party sloppiness.

Microsoft acknowledges that it's making a bigger stink with developers over reliability than ever before. In pursuit of its goal, Microsoft has mandated the following:

- Drivers be tested more thoroughly for memory leaks and be certified.

- Applications must adhere to a more stringent specification to earn an "Optimized for Windows 2000" logo. "Our old logos were basically seen as a way to get stickers on the most boxes," said Craig Bielinson, lead product manager. "This is much more rigorous."

- The highest-end Windows 2000 DataCenter will run only on the systems that have been placed on a "gold" hardware compatibility list, which designates the hardware as fast enough and powerful enough to handle the system's beefed-up requirements.

"[Microsoft] has to get away

from the blue-screen-of-death perception," said analyst Bill Peterson at International Data Corp. (IDC) in Framingham, Mass. A survey of corporate information technology buyers released last week by IDC revealed deep user concerns about Windows 2000's reliability, and that could slow adoption.

But Neil McDonald, an analyst at Stamford, Conn.-based Gartner Group Inc., noted that Microsoft's push to get ven-

dors to build Windows 2000 optimized code will force users to upgrade, because a Windows 2000-optimized application will no longer run on Windows NT 4.0.

### Very Stable

Cameron Cosgrove, vice president of information systems at Pacific Life Insurance Co., said he will upgrade to Windows 2000 at the beginning of next year because the system has proved itself to be

very stable. Cosgrove said he doesn't want to see what he called an exciting new version of Windows fall prey to third-party sloppiness. "There does need to be stricter adherence to the new guidelines," he said.

Microsoft received similar encouragement from Bob Lee, vice president of intranet and distributed technology at Charles Schwab & Co. in San Francisco. Because applications cause more crashes than Windows itself does, he said, more

stringent development guidelines would help. "The lack of a rigid program is what causes a lot of problems in the NT space," Lee said.

Whether developers will heed Microsoft's demands is unclear.

One issue for developers, according to Enrique Salem, chief technology officer at Symantec Corp. in Cupertino, Calif., is that writing to the specification adds costs.

But Salem said that in most cases, it behooves developers to follow Microsoft's recommendations, and Microsoft is eager to help. ■

# Microsoft Bills 'DataCenter' As a Win 2K Workhorse

*But with only a peek at the specs to go by, some wonder how powerful it really is*

BY SHARON GAUDIN

**M**ICROSOFT CORP. hopes to bolster its push into the enterprise with what the company is billing as a big workhorse version of its upcoming Windows 2000 operating system called DataCenter.

The software vendor offered the first peek at DataCenter's

specifications last week.

But some analysts and users said they wonder if DataCenter, which is expected to ship about three months after the other three versions of Windows 2000, will be powerful enough to handle companies' biggest and most important applications. With only early specifications and no actual software to test yet, users can

only go on promised features.

"Right now, Microsoft hasn't really introduced enough differentiation to make DataCenter compelling," said Neil McDonald, an analyst at Stamford, Conn.-based Gartner Group Inc. "It's more of a placeholder for future enhancements.... They're busy just trying to get the product out, and then they'll go back and try to flesh out what they can do with DataCenter."

Windows 2000, Microsoft's update to Windows NT 4.0, is coming out in four packages: Windows 2000 Professional for the client side; Windows 2000 Server for a basic network operating system; Windows Advanced Server to host critical Web sites and line-of-business applications; and Windows 2000 DataCenter for applications that require high availability, such as online transaction processing and data warehousing (see chart).

Craig Beilinson, a Microsoft product manager for Windows 2000, said DataCenter will be Microsoft's power play, offering four-node clustering and

32-way processing. "This is for the application that can't go down," said Beilinson, adding that it's intended to replace Unix servers or ultimately even big iron.

### More Power

But Microsoft will have to come up with plenty of power and reliability to get users to switch from Unix servers or mainframes.

"There's always an interest in getting more power," said James Whitaker, a Novell and NT design engineer at Nextel Communications Inc. in Atlanta. "Our Unix boxes are running our big, mission-critical applications."

There's no need to transition over to something else... especially something I haven't even seen yet. I'd have to see some real power."

And McDonald said that power just isn't there yet. "They don't even have the ability to partition workloads. They have the foundation but no tools to do it," he said. "And four-node clustering? I'd expect more than that." ■

# MSN Messenger Protocol Pitched to Standards Body

BY DOMINIQUE DECKMYN

The instant messaging spat between America Online Inc. and Microsoft Corp. continued last week, as Microsoft published the protocol for its MSN Messenger instant messaging service to make it easier for other developers to connect their instant messaging products with Microsoft's.

Microsoft is proposing its protocol as a draft standard to the Internet Engineering Task Force, which is developing an instant messaging standard called the Instant Messaging and Presence Protocol.

Tribal Voice Inc. in Scotts Valley, Calif., said it would connect users of its PowWow product to MSN Messenger using the protocol, possibly as soon as next month. But it's also trying to reach an agreement with AOL to connect with AOL Instant Messenger, said Richard Dym, vice president of marketing at Tribal Voice.

Tribal Voice claims PowWow has 5 million users. It's also the technology behind AT&T Corp.'s IM Here service.

"Microsoft is doing the right thing," said David Ferris, president of Ferris Research Inc.,

a market research firm in San Francisco. But he said it's unlikely the MSN Messenger protocol will be approved as a standard in its present form because it offers fewer features than other protocols. "The [AOL] ICQ protocols have great richness, so it's unlikely [that Microsoft's] will be a walkover," Ferris said.

AOL, meanwhile, is following a different approach, signing agreements with other vendors to develop instant messaging products that link to its own. Lotus Development Corp., Apple Computer Inc. and most recently Novell Inc. have joined AOL. But the company failed in an attempt to block other vendors — notably AT&T — from using the terms "IM" (for Instant Messaging) and "Buddy List." ■

## High-End Win 2K

Features of Microsoft's Windows 2000 DataCenter:

- 32-way CPU maximum
- 64G bytes maximum memory
- Four-node clustering
- Active Directory
- Kerberos security
- Process Control Manager — a workload management GUI

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## BRIEFS

## Med Center Inks \$1B Outsourcing Contract

Compuware Corp. in Farmington Hills, Mich., and its health care subsidiary, CareTech Solutions Inc., last week signed a 10-year, \$1 billion agreement with the Detroit Medical Center (DMC) to maintain DMC's data-center operations, applications and voice information systems. Compuware said it will retain all 300 DMC employees, and no layoffs are expected.

## URL at Center Of Banking Lawsuit

U.S. Bancorp, the nation's 13th-largest bank, is suing a much smaller institution to prevent it from using its Internet address. Minneapolis-based U.S. Bancorp, which launched its own online banking business on Monday ([www.usbank.com](http://www.usbank.com)), has sued USABanc.com Inc. over concerns that the two Web sites will confuse customers. A federal District Court judge in Minneapolis last week ordered USABanc.com to stop running its site until the matter has been settled.

## Apple Sues eMachines Over iMac Clone

Apple Computer Inc. said it filed a lawsuit last week against eMachines Inc. in its latest attempt to prevent upstart rivals from cashing in on its iMac design. The complaint, filed in U.S. federal court in San Jose, accuses eMachines of illegally copying the iMac's industrial design. It asks the court to prevent eMachines from shipping its look-alike computer and seeks unspecified actual and punitive damages.

## Nonprofit Group Bids To Run .edu Domain

Educause, a Washington-based nonprofit group that represents 1,600 college network administrators, is bidding to take over the management and administration of the .edu Internet domain. A timetable for an administrative transfer hasn't been set yet by the Internet Corporation for Assigned Names and Numbers.

## Eight-Way Servers Unleashed on Market

*Lower maintenance, staffing costs eyed*

BY STACY COLLETT

**M**OST MAJOR server manufacturers start their engines today as Intel Corp. officially releases its long-awaited Profusion eight-way chip set.

Users will have more server choices than ever with 20 manufacturers bringing eight-way products to the marketplace for \$20,000 to \$80,000, depending on configuration.

Compaq Computer Corp., touting its ProLiant 8000 and 8500 servers, last week was the first. Hitachi Data Systems and Dell Computer Corp. announced their eight-way server offerings today. IBM and Hewlett-Packard Co. plan

launches early next month.

Intel's chip set, which gives servers the power of up to eight 550-MHz Pentium III Xeon processors, will also support more operating systems than ever, including Windows NT, Windows 2000, Santa Cruz Operation Inc. UnixWare, Sun Microsystems Inc. Solaris and Novell Inc. NetWare. But most server makers will offer NT as the standard platform.

Initial benchmarks show Intel-powered, eight-way servers ran about 37,000 transactions per minute. "That's about 50% to 60% higher than four-ways," said Richard Fichera, vice



**PATRICK:** Eight-way the way to go

president of research at Giga Information Group Inc. in Cambridge, Mass.

Information technology departments whose four-way servers are reaching their workload performance limits — especially those with e-commerce applications — may want to check out eight-way servers.

Compaq is taking its new eight-way servers directly to the Internet market. Digex, a Beltsville, Md.-based Internet service provider, plans to buy close to 100 ProLiant 8500s for its large database and application servers, said Bobby Patrick, vice president of strategy and product development.

Barnesandnoble.com in New

York plans to purchase more than a dozen eight-way servers to drive its enterprise resource planning system and front-end Web farms this Christmas season, said Alan Bourassa, director of distribution and fulfillment systems.

Eight-way servers can also cut maintenance costs and staffing needs. Customers who want to reduce the number of servers that handle e-mail applications, for example, could use several dozen eight-way servers instead of a hundred two- or four-way servers, said Amir Ahari, an analyst at International Data Corp. in Framingham, Mass.

Observers said the Profusion chip set inches Intel closer to the performance of RISC-based systems. "The workload you can get through the largest single Unix system today is three times greater than the Intel-based system," Fichera said.

Overall, Ahari emphasized caution. "It's untested eight-way technology, and the applications and operating system support for it are still very limited." ▀

## Banks Cheer Fed Approval Of Electronic Statements

*But issues like Y2K could delay effort*

BY KATHLEEN OHLSON  
AND DOMINIQUE DECKMYN

Banks reacted enthusiastically last week to an interim rule from the Federal Reserve Board that would allow them to send their customers their account statements electronically rather than through the mail.

The ruling is part of a wider-ranging proposal that would further extend electronic communication with consumers to include required disclosures about loans, leases and other exchanges.

To send statements electronically, banks and other institutions would first have to obtain a customer's approval and confirm that the customer's computer can receive electronic disclosures. Disclosures for business that must be

done in person would still require paper forms.

According to Gary Caulfield, executive vice president of information management at First Hawaiian Bank, a subsidiary of BancWest Corp. in Honolulu, "the devil is in the details, but the Fed seems to be recognizing the changes in financial services."

Banking analyst Bill Bradway at Meridien Research Inc. in Newton, Mass., said the proposal appears to contain more

detailed guidelines than a March 1998 proposal. But he said most banks' preoccupation with year 2000 issues and consumers' preference for paper statements could hold the effort back.

Still, the benefit to banks could be huge. Tom Kelly, a

spokesman for BankOne Corp. in Chicago, said his bank's credit-card subsidiary, First-USA, already sends statements to more than 1 million customers by posting them on a secured Web site, saving 30% to 40% over the costs of printed statements. ▀

## Bank Regulators Go Online

BY PATRICK THIBODEAU  
WASHINGTON

Federal banking regulators are adding information technology jobs and preparing to shift resources from Y2K as part of a stepped-up effort to monitor Internet banking offerings.

For instance, the National Credit Union Administration hasn't been examining online activities, because the agency said it has "been totally focused on Y2K compliance," spokeswoman Lesia Bullock said. But the agency is turning its attention to online and will shift year 2000 IT employees in that direction.

Online banking follows the same rules as regular banks and has been around for a long time. If regulators act in some

new way toward it, "it's going to be a reaction [to trouble] rather than proactive," said Octavio Marenzi, financial analyst at Meridien Research Inc. in Newton, Mass.

The U.S. General Accounting Office, however, said a review of bank examinations pointed to problems at nearly half the online operations, such as a lack of policies and procedures to guide online banking operations, a lack of staff and a focus on Y2K efforts.

But Peter S. Browne, a senior vice president at First Union Corp. in Charlotte, N.C., said the study was out-of-date and didn't reflect the progress that banks were making in minimizing online banking risks. ▀

## JUST THE FACTS

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■ 80.3% consider regular mail more secure than e-mail

SOURCE: PITNEY BOWES INC., STAMFORD, CONN.

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# New IBM Desktop Line Eases Management

BY MATT HAMBLIN

Targeting the desktop management quagmire, IBM last week announced a PC line pre-

loaded with tools said to slash rollout and servicing costs.

At the low end, the 433-MHz 300GL desktop will include

low-cost Celeron processors and will be priced at \$849, not including a monitor.

The machines will be pack-

aged with IBM's latest version of Universal Management Services (UMS) tools, which let a network manager remotely administer a system. With UMS, a manager can download an entire software image to all the

PCs over a network as well as monitor and administer the machines throughout their lifetime.

Analysts said such tools have been available to the largest business users for months from several vendors but weren't always free.

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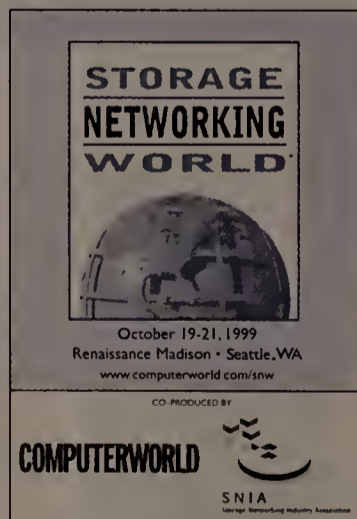
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### Saves Time, Money

At travel insurance company World Access Service Corp. in Richmond, Va., managers used a previous version of UMS to deploy 105 IBM 300PL desktops with Pentium processors in March. It took the staff only 10 hours for the deployment, down from the usual 157 hours it took without the PC management tools, said Bobby Schmidt, network administrator at World Access.

The time savings meant the company saved about \$6,000 on the deployment, a figure that will grow as World Access uses the tools to monitor PCs and provide software upgrades.

"We're growing a lot at this company and need to quickly upgrade machines with the appropriate operating system and applications, so this tool provides long-term benefits," Schmidt said.

World Access is adding another 50 desktops by November and will use the IBM tool in that deployment.

### Mid-Market in Mind

IBM and analysts said UMS works in networks with various PC brands, not only IBM machines. "These tools save time in troubleshooting and solving problems, something not really available in the small and medium business markets until now," said Deepinder Sahni, an analyst at Access Media International in New York.

In addition to UMS, IBM offers free tools to provide basic maintenance and data protection for network managers. One tool performs emergency data backup if an operating system gets corrupted or the hard drive fails. ▀

### Desktop Control

Recent PC remote management tools:

**IBM:** Universal Management Services

**Compaq:** Insight Manager

**On Technology:** On Command CCM



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# Looking for Mr. Warehouse

*Workers with data warehousing and mining skills are among hardest to find*

BY STEWART DECK

**N**OW THAT data warehousing and mining projects are becoming the keystone to corporate marketing campaigns, IT staff recruiters say finding people with those data-crunching skills is a top priority.

In fact, data warehousing and mining are some of the hottest skills in the information technology field, according to a recent study by Hewitt Associates LLC in Lincolnshire, Ill. Many of the 224 companies surveyed said they anticipate a shortage of workers with those particular skills.

Experts said IT recruiters should look for a combination of technical and business skills to find a warehouse winner.

John Ladley, a research fellow at Meta Group Inc. and president of Chicago-based consultancy Knowledge InterSpace Inc., advised looking for actual hands-on warehousing and mining experience and exposure to decision-support projects. "A background in measurement and statistical analysis ... and experience building an executive information system tells you they understand data quality issues," Ladley said.

## What It Takes

Darrell Grekul, a business analyst who helps run a data warehouse at TimberWest Forest Ltd. in Vancouver, British Columbia, said a good warehouse résumé shows time spent with relational databases

and an understanding of analytical tools. And business experience shows whether the applicant understands what drives a company and its data support projects, he said.

Experts said political skills are key to data warehousing success, which requires working with end users to meet

their data needs and persuading divisions to give up data "ownership" for the greater good of the overall project.

Frank Gillett, an analyst at Forrester Research Inc. in Cambridge, Mass., said experience with data extraction, conversion and modeling will be in demand in the next few years.

## Paper Credentials

Analysts warned that some warehousing skills may look good on paper but won't be that useful. "Ten years' experience sometimes is just one year of experience repeated 10 times," said Herb Edelstein, an analyst at Two Crows Corp., a Potomac, Md., consultancy.

"Really good people in this area are at a premium, so you have to be willing to develop your own," Edelstein said. Try grooming smart, enthusiastic employees who can grow into the job, he advised. ▀

## Prepping for Warehousing

*A sampling of sought-after skills for data warehousing:*

- Background in statistical analysis
- Political savvy
- Data modeling experience
- Database administration background
- Coding skills for building interfaces

SOURCE: USER AND ANALYST INTERVIEWS

# IT Spices Up \$3.6 Billion Supermarket Buy

*But future of online operation uncertain*

BY SAMI LAIS

Sophisticated networks and information technology at Hannaford Brothers Co. were among the supermarket chain's attractions in its \$3.6 billion acquisition last week by Food Lion Inc., said a Food Lion spokeswoman.

For example, Scarborough, Maine-based Hannaford has just finished expanding its Asynchronous Transfer Mode (ATM) network from 46 Maine stores to the entire chain. That move was precipitated by satellite outages last year that took out Hannaford's networks, leaving many stores unable to transmit daily sales data, said William Homa, Hannaford's IT director.

"Yesterday, I turned off the satellite," nearly two months ahead of schedule, Homa said.

Hannaford is one of the only 2% of retailers that use costly ATM, according to a May PricewaterhouseCoopers sur-

vey. But because Maine has one local access and transport area, Hannaford pays half the usual cost of ATM service in other parts of the country. Homa further trimmed costs by connecting via T1 lines, rather than faster, pricier DS-3 lines.

"We went live with [pre-release Cisco Systems Inc. T1 ATM routers] in our four

biggest stores just before Christmas" with no problems, Homa said.

Although videoconferencing, used mainly for meetings, is available only in the four executive offices, "we can turn that on in a nanosecond" at other sites, he said.

Hannaford paid \$1 million for the routers and other hardware and will pay \$1.6 million annually in network costs.

Hannaford has been out in front online, too. In 1996, it was an early entrant into the online grocery business with its Homeruns.com, based in Auburndale, Mass. But plans for Homeruns.com, which has been losing money, are still up in the air, the Food Lion spokeswoman said.

## Losing Money

"All the online groceries are losing money, and it's going to be that way for some time," said Jennifer Marino, an analyst at EMarketer, a market analysis firm in New York.

Hannaford is also "very well-known for their computer-based training. Food Lion can

learn from that," said the Food Lion spokeswoman.

Year 2000 doesn't seem to be an issue in the merger. Both companies said they are nearly finished with year 2000 work. "We're tying up a few loose ends and expect to be finished by the end of August," Homa said. All "significant suppliers have notified us that they're in compliance, and we're fairly comfortable with that."

At Food Lion, in Salisbury, N.C., "there's a little new software to be installed, but we've been testing extensively, and we're confident we'll be OK," the spokeswoman said.

Over coming months, the two companies will be looking at best-of-breed practices each has implemented, including in IT, said a Hannaford spokeswoman. Hannaford will operate as a subsidiary of Delhaize America Inc., Food Lion's new holding company.

Industrywide, acquisitions are likely to continue, said Michael Shea, an analyst at D. A. Davidson & Co., an investment bank in Portland, Ore., to get "the greater efficiencies in purchasing, advertising and distribution. And there are still quite a few others out there Hannaford's size." ▀

## JUST THE FACTS

### Grocery Merger

#### FOOD LION INC.

Headquarters: Salisbury, N.C.

Brand names: Food Lion, Kash 'n' Karry, Save 'n' Pack

Number of stores: 1,258

Locations: From Pennsylvania to Florida

1998 revenue: \$10.2B

#### HANNAFORD BROTHERS CO.

Headquarters: Scarborough, Maine

Brand names: Hannaford, Shop 'n' Save

Number of stores: 152

Locations: New England, New York and the Southeast

1998 revenue: \$3.3B

# ETrade Plans After-Hours Stock Trading

BY THOMAS HOFFMAN

ETrade Group Inc., the nation's second-biggest online brokerage, last week announced plans to offer after-hours trading to its customers beginning next month.

ETrade isn't the first brokerage to dive into extended hours trading, but it's the largest so far, and it will trade stocks that are listed on both the New York Stock Exchange (NYSE) and the Nasdaq Stock Market Inc.

Datek Online Brokerage Services LLC, another big broker that's already providing after-hours trading, offers users only Nasdaq-listed stocks through Island ECN, an electronic communications network (ECN).

## After-Hours Pioneers

ECNs are trading networks that were originally crafted to offer institutional investors an alternative to trading stocks on the Big Board or Nasdaq. But as the NYSE and Nasdaq continue to stall their respective entries into after-hours trading, ECNs have begun to pioneer after-hours trading for individual investors.

To strengthen its position, Palo Alto, Calif.-based ETrade is teaming up with Instinet Corp., which is the biggest ECN that operates after traditional market hours, said Larry Tabb, an analyst at TowerGroup in Needham, Mass.

The NYSE and Nasdaq markets close at 4 p.m. Eastern time. ETrade plans to offer trading from 4:00 to 6:30 p.m. when its service begins next month.

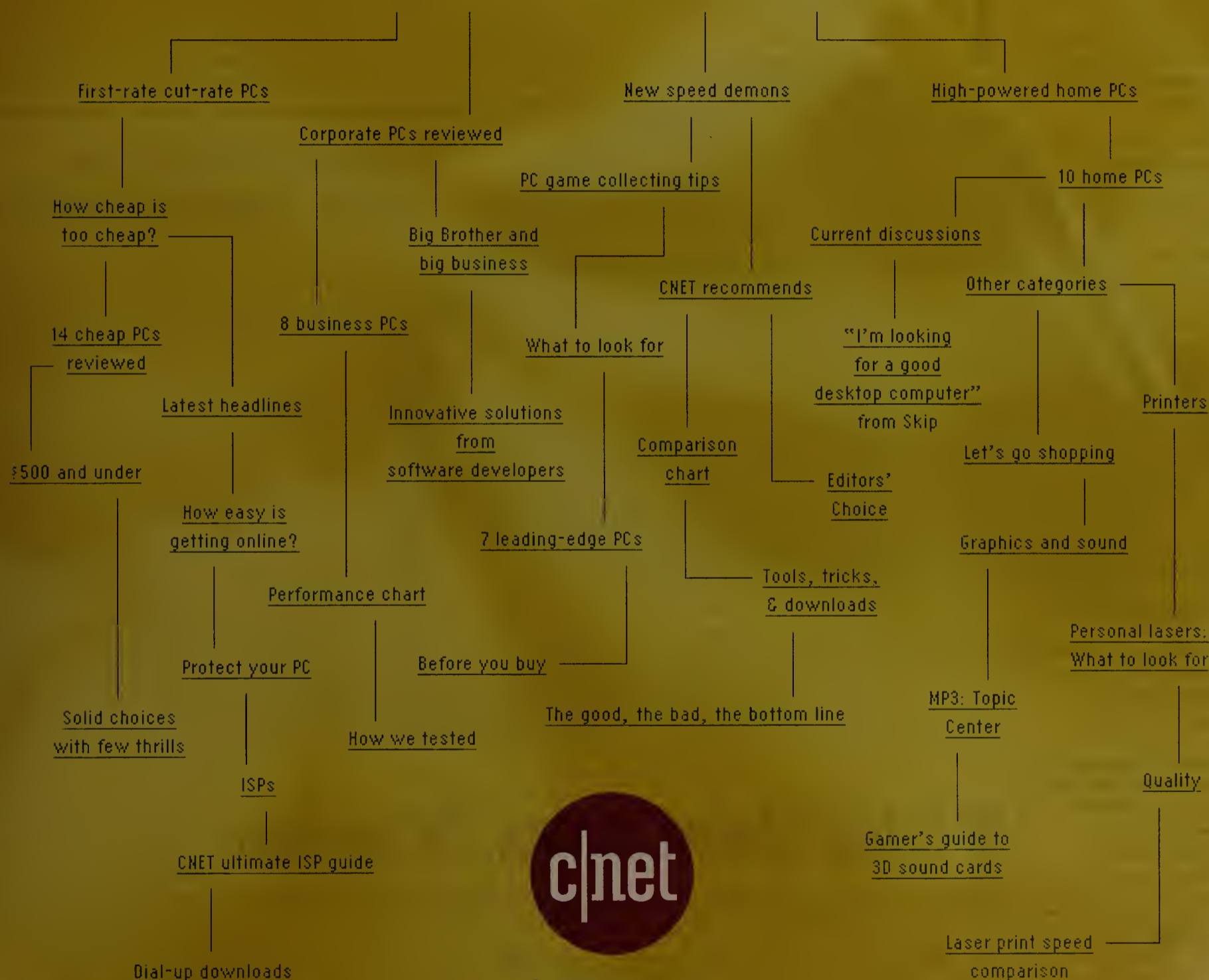
Last month, ETrade's biggest competitor, Charles Schwab & Co. in San Francisco, announced it had formed a joint venture with Fidelity Investments and broker Spear, Leeds & Kellogg LP to create another alternative-trading network that's expected to eventually offer after-hours stock trading.

Tabb said ETrade's move will force Schwab to begin offering extended hours trading "within a few months." ▀

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## BRIEFS

## Schwab Traders Can Soon Go Wireless

Brokerage firm Charles Schwab & Co. has entered into a development relationship with Aether Technologies International LLC, a wireless integrator and service provider. The companies plan to offer a new cross-platform wireless trading service, which will be introduced by year's end.

The service will let Schwab customers use a variety of pagers, handheld computers and cellular phones for trading.

## Citigroup Names Trainer New CIO

As expected, Citigroup Inc. has named Tom Trainer as its new CIO. Trainer, former CIO at Reebok International Inc. and Eli Lilly & Co., joined the New York-based financial giant in April and was reporting to Mary Alice Taylor, Citigroup's head of global operations and technology.

An internal memo sent out last week by Citigroup's co-chairmen stated that Taylor will be leaving the firm.

## Sun Unveils Specs for Java Microprocessor

Sun Microsystems Inc. last week released technical details of the new Microprocessor Architecture for Java Computing. Chips based on the architecture will be able to process complex graphics and voice data at high speeds for online multimedia applications, wideband telecommunications networks, medical imaging systems and e-commerce applications.

## Short Takes

**MICRON ELECTRONICS INC.** bought the outstanding stock of **NETLIMITED INC.**, a Los Angeles-based Internet content and applications hosting provider that operates under the name **HOSTPRO**. . . . **TOYOTA MOTOR SALES USA INC.**, the American distributor of **TOYOTA MOTOR CORP.**, will standardize on **DELL COMPUTER CORP.** desktop PCs, servers and storage over the next three years.

# Building Industry Braces For IT, Online Onslaught

*Web portals are only the beginning as broadband Internet beckons*

BY SAMI LAIS

**I**N COMING MONTHS, richer Web portals and broadband networking will shake the foundation of the low-tech construction industry — from the way buildings are designed, specified and even built.

In November, a slew of competing approaches to automating the industry — from online 3-D product catalogs to extranets connecting architects, suppliers and builders — will vie for attention at a major industry trade show in Chicago.

Replacing paper product information with electronic versions could save \$40 billion annually in the U.S. and \$80 billion worldwide. More than 10% of the annual \$400 billion building construction market is spent on disseminating information, said Arol R. Wolford, president and CEO of CMD Group, a construction information supplier in Atlanta.

That's a good beginning, said Christine Hluska, communications director at interior designer HLW International LLP in New York. Currently, architectural specification forms are electronic, but spec writers must thumb through shelves of

product catalogs, which often are outdated before they're printed, she said.

Some industry catalogs are already online. McGraw-Hill Co.'s "Sweet's Catalog" is available at F. W. Dodge's Web portal, and CMD's "Architect's First Source" is at CMD's portal. Both industry bibles are available via the Washington-based American Institute of Architects (AIA) Web site, too.

"Computers have been used in the industry, but no one has pulled [information technology] together around a business process," said Geoffrey Bock, senior consultant at Patricia Seybold Group in Boston.

Until now, that is. CMD and F. W. Dodge are competing with trade group AIA and Web-based workflow software maker BidCom Inc. to play online host to the building community, said Darrell Lewis, AIA director of electronic publishing.

There is grassroots support for Web-based collaboration among architects, suppliers and builders, Lewis said, but getting construction sites online may take a bit longer.

To that end, San Francisco-based BidCom is integrating 3Com Corp.'s Palm handheld

devices with its project management software so that builders "can gather information in the field, come back to the office and sync up with our servers," said Daryl Magana, BidCom president and CEO.

That sets the stage for a broadband extranet, Wolford said, with 3-D product catalogs and installation instructions, collaborative computer-aided

design and virtual reality technology (see story below). Other industry IT initiatives have failed, Bock said, because "bandwidth has been a problem. But with the advent of broadband and high-speed Internet access," that's going to change fast, he said. "It's like building the interstates, where the speed of access changes the character of commerce." ▀

## Broadband Pilot Project Brings Architects, Builders Together Online

NEW ORLEANS

A July pilot of a broadband intranet for architects, designers, builders and suppliers was a hit at the recent Architects Technology Summit here.

The intranet, called CMD Exchange, builds each user a personalized home page for e-mail, weather reports, forms, construction news, project leads, requests for proposals, building codes, 3-D catalogs, collaborative design and virtual reality applications.

Via the intranet, "as much as 80% of a building will be constructed in [virtual reality]" before actual groundbreaking, said Scott W. Wyatt, CEO of pilot participant NBBJ Architecture in Seattle.

CMD Exchange began as a Web portal, but, "We realized we

needed to rethink how we do business. . . . it had to be strongly visual, and a [28.8K bit/sec.] connection wasn't going to do it," said Arol R. Wolford, president and CEO of building information supplier CMD Group in Atlanta.

To handle the graphics, the intranet runs on a T1 or faster line. Raymond Cheng, CEO of Web developer Consortio in Bellevue, Wash., brought in Computer Associates International Inc.'s Global Professional Service to help build the intranet, using CA's Jasmine TND application development software.

Several architects at the conference signed up for an expanded, ongoing pilot. CMD hasn't yet devised a pricing structure.

— Sami Lais

## HP Details Internet Strategy, Partnerships

*HP World highlights include Apps-on-Tap and vertical portals*

BY JAIKUMAR VIJAYAN

Hewlett-Packard Co. trumpeted a well-received Internet strategy and announced a new partner at last week's HP World user conference in San Francisco.

Led by newly appointed CEO Carly Fiorina, various company executives gave users a glimpse of the company's future plans, which will focus mainly on delivering rentable Internet applications, building

vertical portal sites and developing dynamic brokering middleware for the Web.

HP also announced a partnership with Oracle Corp., under which the companies will work on integrating the Oracle8i database and related Internet products with HP technologies like its ESpeak brokering software.

HP is also working with Qwest Communications Inter-

national Inc., an Internet provider in Denver, and Intelisys Electronic Commerce LLC in New York, a provider of Internet procurement products, as part of its Apps-on-Tap strategy to let users rent critical corporate applications such as enterprise resource planning programs.

"HP has become more focused," said Ralph Fusco, information technology direc-

tor at Liz Claiborne Inc. in Bergen, N.J. "It is the reason why the company has become very much a part of the Internet culture at our company."

On the hardware side, HP last week demonstrated database, multimedia and Internet applications running on a simulated Merced server at HP World. Merced is the forthcoming 64-bit chip jointly developed by Intel Corp. and HP.

The first HP servers based on the systems should start shipping by mid-2000, said Eric Clow, an HP technology marketing manager. He added that the company will continue to offer its PA-RISC systems. ▀

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# Job Done, Social Security's Y2K Leader Is Moving On

*Y2K lessons: Software development is key, CIOs got seat at table*

BY PATRICK THIBODEAU  
WASHINGTON

**T**HE U.S. Social Security Administration has led other large federal agencies in repairing the year 2000 problem. But the person who is responsible for spearheading much of that effort is retiring and beginning a second career.

Kathleen Adams — the agency's assistant deputy director of systems and chairman of the year 2000 commit-

tee of the federal government's Chief Information Officer's Council — said last week that she plans to work at SRA International Inc., an information technology consulting and systems integration firm in Fairfax, Va., as vice president of strategic accounts.

**Q: Will you be anxious about the year 2000 performance of Social Security or federal systems?**

**A:** If we had not completed everything that we set out to do and finished our program, I

would not be going.

I'm taking what's called an "early out" retirement. As a career employee, I'm about as high up as I'm going to go. Jobs above my level are political appointees.

**Q: What have you learned from repairing the Y2K problem?**

**A:** I don't know if it's year 2000 per se, but one thing we really have been looking at is improving our software de-

velopment processes. We always tend to think of programming and IT as being very creative, and it should be, but the application of it should



**"[Y2K has] brought the CIO more to the table."**

**- Kathleen Adams, on leaving the Social Security Administration**

be more methodical and disciplined.

**Q: What has all this taught you**

about the role of IT professionals in large organizations?

**A:** Y2K has really made people realize the extent to which we depend on automated systems and computers to do business. And in many ways I think it's brought the CIO more to the table, if you will, in a number of corporations and governmental agencies.

**Q: How can federal agencies compete more effectively with the private sector for IT employees?**

**A:** What the government can offer, as long as we keep the salaries relatively close [with private industry] ... is [the] value of working in public service.

We have a great mission. There are 48 million [people] who depend on us to get their payments every month. For the 27 years that I've been here, I always knew that what I was doing mattered. ▀

Continued from page 1

## MCI's Outage Compensation

which estimated that it lost 180,000 contracts during the outage. "It wasn't just the exchange that lost revenue. It was the members and customers who lost seven out of eight days of trading opportunities," Spring said.

As unhappy as many customers are, they could be getting less.

Hank Levine, a Washington attorney whose firm represents more than 50 MCI large corporate customers, said most business customers are entitled to virtually nothing under the tariffs MCI filed with the Federal Communications Commission. Tariffs take precedence over any individual contracts negotiated with telecommunications carriers, Levine said.

### Credits Are Limited

Only big firms with aggressively negotiated deals stand a chance at getting appropriate credits, Levine predicted. Others will get the two-for-one credit. Some of those may consider filing a formal complaint with the FCC, claiming MCI's offer was unjust. But those complaints can take a year or two to resolve, Levine said.

MCI CEO Bernard Ebbers

said there may be certain extenuating circumstances that his company will want to consider for some customers. "But we will handle that certainly on a case-by-case basis. You know, obviously, our objective is to retain our customers," he said.

What particularly irked some customers was the length of time it took MCI to decide to roll back to its old equipment from Murray Hill, N.J.-based Lucent Technologies Inc. — the software that had been in place before the outage began. The frame-relay network congestion occurred as MCI was attempting to upgrade to more scalable, feature-rich Lucent software, but the companies have yet to determine the root cause of the problem.

"It went on for 10 days, and that had a severe impact on a lot of customers," said Bill Bartkus, vice president of information systems at TravelCenters of America in Westlake, Ohio. "I think that was a long time to come to the conclusion that they came to."

Bartkus said his company will ask for a minimum of 20 days of service plus compensation for the long-distance

bills incurred when it went to its Integrated Services Digital Network and dial-up backup system during the outage.

The compensation offer "ignores the damage to our reputation and the reputation of our wholesale [Internet service provider] customers, and it fails to recognize small [Internet service providers] that have gone out of business because of this," said Mark Stutz, a spokesman for RMI.Net Inc.

The Denver company's Data Xchange Inc. division couldn't provide service to 66 of its 150 Internet provider customers,

and those customers, in turn, couldn't provide service to their customers.

"I think they should really sit down with each and every client and see what they actually lost," Taitano said. "Every client is going to have a different loss factor. Why are you just going to give out a balloon payment of two-for-one? They have to ask themselves: 'Is this really fair?'"

Noting that his company has had prior complaints with MCI, Taitano said it plans to look at another carrier (see related story below).

Electronic Data Systems

Corp. is a partner of MCI's and has no plans to move elsewhere, a spokesman said. But the company is still assessing the effects of the brownout — which included the sporadic loss of 5,000 of the 16,000 automated teller machines it owns or operates.

"What we're concerned with is 24/7, 365 [days per year] uptime," said Bill Duncan, marketing director at EDS's consumer network services in Morris Plains, N.Y. "We're concerned about our customers. I don't think that token [MCI offer] makes up for the hurt they're feeling." ▀

## Changing Frame-Relay Network Carrier Can Be Difficult

Some disgruntled corporate customers of MCI WorldCom's frame-relay service said they're considering switching carriers. But industry analysts warn that won't be easy.

"It's much easier to move from one long-distance provider to another than to move from one frame-relay network to another," cautioned Jay Pultz, an analyst at Gartner Group Inc.

"You're impacting all of the locations connected to the network, the applications on the network and the business itself again," said Liza Henderson, a consultant at TeleChoice Inc. in Tulsa, Okla. "So unless [a company] builds a completely parallel network to run side

by side to do the migration, it can expect some transition downtime."

Companies might opt for a phased migration, Henderson said, but even that can be difficult and time-consuming. "It depends on how big the network is and whether or not you can segregate locations," she said.

Before making any decisions, companies should recognize that the software upgrade problem plaguing the MCI frame-relay network could affect any carrier as it scales to accommodate more customers, analysts said. AT&T Corp., for instance, experienced a wider-reaching, 23-hour outage in April last year. (It credited customers for

the amount of time needed to identify the root cause of the April 13-19 outage.)

"It's time that enterprises assumed that these kinds of failures will happen and put in backup that protects them," Pultz said. "And they need to pressure their carriers to improve the reliability of their networks."

Two of MCI's biggest rivals, AT&T and Sprint Corp., said they're not offering any special deals to induce unhappy customers to switch. But an AT&T spokeswoman said the company has seen an increase in customer inquiries as a result of the MCI outage. — Carol Sliwa

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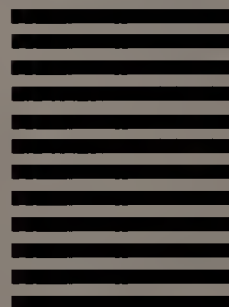
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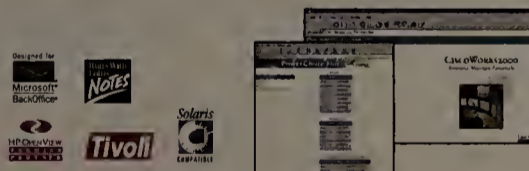
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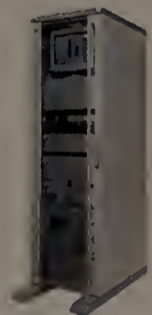
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## Point of View

### Repurposing the South China Morning Post

To call July 1, 1997 a big-news day for the South China Morning Post (SCMP) would be a bit of an understatement. For Hong Kong's 250,000 subscriber-strong English-language newspaper — and every other news outlet in the world — the handover of the British colony to Chinese rule would be one of the most important stories of the decade. The newspaper, nearly a century old, planned to capture the ceremonies with a live 30-hour Webcast, delivered via secured servers in Hong Kong, Singapore, San Francisco, and Vancouver.

But, for the paper, as well as for the dynamic city it covers, July 1, 1997 was an historic stepping-off point, not just in terms of news coverage, but also in terms of technology. The multimedia "Countdown to History" Webcast was the first step in SCMP's ambitious plan to deliver a host of Internet services, transforming the company from the publisher of the SCMP broadsheet into a multi-platform information provider that would supply late-breaking news, classified ads, e-commerce, and real-time video streaming via its Web site.

But before the SCMP could do any of those things, its IT department had to prove itself with the handover Webcast. That meant first choosing a technology platform capable of providing fault-tolerant performance, flexibility, and scalability (the Web site got more than 6 million hits on the day before the Chinese takeover), while still taking into consideration the company's stringent time-to-

*Continues on far right*

# Windows NT

▲ *Enterprise Wise*

## Hiring consultants vs. contractors:



*By Steven Gould*

I am frequently asked by my clients to expound on the differences between consultants and contractors. Many, if not all medium and large companies with an IT department frequently use these third parties.

It's important for me to state up-front that I'm a professional consultant.

The line between the roles of a consultant and a contractor is thin — and sometime it blurs. Some of the more experienced and business-

minded contractors may be able to provide some of the services normally provided by a consultant. A consultant, however, should always be able to fill a contractor's position.

When hiring a contractor, you typically deal with one of the many "body shops" and review a handful of resumes. You then select the individuals whom you are interested in interviewing based entirely on their specific job skills. For example, if you know you need a Visual C++ programmer, you try to identify someone with Visual C++ experience.

The people you interview in this way are effectively individual contractors represented by a larger contracting agency. As their contract with you approaches its end, they are likely to begin

## Standardizing IT environments viewed as Microsoft, Compaq offering critical components for integration

If you're running a typical Windows-based IT environment today, chances are good that it consists of more than one Windows operating system. Your users could be running Windows 3.1 and Windows 95, or Windows 95 and Windows 98. Count Windows NT as part of your environment, or throw a few Unix boxes on top, and you'll soon have your network administrators running in circles without a compass.

So what do you do? Standardize.

Standardizing your software and hardware offers a wealth of benefits. It helps you reduce overhead, improving your bottom line while minimizing potential headaches for network administrators and service and support teams.

So, how do you as an IT manager standardize these desktop environments easily and efficiently? What hardware and software systems should you implement to make your assorted Windows software (and, sometimes, software for Unix systems) operate in sync? How do you make the transition to a standardized environment easier for administrators, while at the same time increasing the efficiency of network management after the environment is standardized?

Buying hardware and software is easier, faster, and cheaper when the hardware and software are

standardized. Having your organization choose one or two specific platforms, operating systems, and software-configuration "profiles" to create a consistent, standardized IT environment enables you to work with vendors to purchase equipment and software in larger quantities at discounted prices.

Additionally, it takes less time to buy hardware and software when those purchases go through a central department, such as the MIS department. When individual departments make their own purchases, they typically have to complete a purchase order for each piece of equipment or software they want to obtain. This lengthens the procurement process and places a heavy administrative burden on each department, says Mike Clark, Vice President of the High-Availability Segment for Compaq Computer Corp.'s Industry Standard Server Division.

If individual departments, such as marketing or accounting, are left on their own to determine what hardware and software to purchase for their end users, their purchases are likely to be inconsistent with the rest of the organization. This moves the organization further away from a standardized IT environment. A central purchasing department enables the organization as a whole

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# Advantage

## Point of View

### the important issues to consider

looking for their next assignment, since they are typically paid by the hour, and only for those hours billed.

When dealing with contractors, you will find that they typically do only the task or tasks that you assign them, leaving you in total control of the project scope, deadlines, and budget. This can be a very beneficial relationship for you, your company, and the contractor.

A consultant is a full-service, experienced professional who walks in with a broad range of skills and a good business perspective. An effective consultant is better able to advise you about different technologies, and the advantages and disadvantages of each when applied to your business situation. A consultant is able to assist

you with strategic planning and goal setting, provide full life-cycle support, and help you meet your deadlines. In this way the consultant shares, and in some cases owns, responsibility for the success of the project.

Consultants should not only accomplish the immediate task at hand, but also provide a complete business solution, making your job as an IT manager easier.

In most cases, consultants work for a large, diverse consulting company. This enables them to draw on a substantial pool of talent, both in technical and business arenas. The relationship between you and a consultant is much more than a relationship between two individuals; your relationship extends to the entire consulting organization. This type of relationship often lasts longer and is beneficial to all involved.

For more on consultants vs. contractors, visit [www.WindowsNT-Advantage.com](http://www.WindowsNT-Advantage.com)

### key to productivity migration efforts

to channel acquisition requests more efficiently and better monitor what hardware and software is running in each department.

Standardizing hardware and software configurations across the enterprise allows your organization to manage inventory better, because the software running on all systems will be familiar

to you. Microsoft's Systems Management Server 2.0 (SMS) helps network administrators manage both Windows-based desktops and servers and the software they're running. It provides your network administrators with inventory management, distribution, and diagnostic tools for both 16-bit and 32-bit Windows-based clients.

market and cost issues. After giving due consideration to a RISC-based solution from Sun Microsystems, SCMP decided that the best way to achieve its goals would be to commit itself to a muscular Compaq-Microsoft combination that included Compaq ProLiant servers running Windows NT Server, NetShow, and SQL Server.

Of course, some things are beyond even a good system's control. Fifteen minutes before the handover ceremonies were slated to begin, power was interrupted more than a dozen times at the central server in the Hong Kong Convention & Exhibition Center, and there was no UPS back-up. There was simply no time to reinstall software or reformat hard drives.

Fortunately, ProLiant servers know how to recover under extreme situations. Every time the power cut out, the Compaq servers rebooted themselves with no problems and carried on as they had before, according to Chris Justice, who at the time was manager of PostNet, SCMP's Electronic Information Division. In the end, and to the relief of virtually an entire city, the Webcast performed flawlessly.

Two years later, the Compaq-Microsoft solution has proved its scalability at a cost several times less than that of the Sun solution, according to Justice. Today, in addition to replicating much of the printed version, SCMP's Internet edition includes such value-added features as Global Investor, a subscription-based business information service providing access to more than 4,000 newspapers, magazines, and trade journals worldwide.

Users also have access to a personal investment weekly magazine, the online Classified Post-Interactive section, horse racing information, a business and humor site called Space, personal ads, a guide to Hong Kong hotels, and a shopping area.

## Windows NT Advantage

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Point of View

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How Compaq armed road warriors with portables that pack Windows NT's punch.

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# Senators May Talk To Chemical Firms

*No major safety issues apparent, but officials say they need to know more*

BY PATRICK THIBODEAU  
WASHINGTON

**W**HEN DEC. 31 arrives, chemical maker Celanese Ltd. will have extra people on duty and others on call. The company's emergency command center will be on watch for problems at its 30 worldwide sites, but especially at those in time zones well ahead of its Dallas headquarters.

If a year 2000-related problem develops at its Singapore plant, for instance, that information will be relayed to headquarters. "If one site has a problem, the other sites will have a chance to learn from it,"

said John Susil, process safety manager at Celanese.

Susil said he believes Celanese has a good handle on Y2K. But the same can't be said for the chemical industry at large. U.S. officials said they know little about the industry's year 2000 readiness, especially among medium-size and small manufacturers and handlers.

The White House, at the urging of the Senate Special Committee on the Year 2000 Technology Problem, expects to meet late this month with chemical producers and trade groups on the Y2K risks posed by chemical manufacturing processes.

"At this juncture, there is no

## Accident Rate

1995

24,165 chemical accidents, 42 deaths, 937 injuries

1996

22,107 chemical accidents, 34 deaths, 914 injuries

SOURCE: THE U.S. CHEMICAL SAFETY BOARD

indication that there are major safety issues" in the chemical industry, said White House Y2K czar John Koskinen. But "we don't have enough information to conclusively determine that."

Chemical manufacturing makes extensive use of computer controls and embedded systems. Those systems, industry experts say, are built with numerous safeguards and were designed to safely shut down if

power is lost or system problems develop.

"I have a hard time conceiving of things that can go wrong because of Y2K that are new and different," Susil said.

But there could be "consequences that aren't yet understood," said Gerald Poje, year 2000 coordinator at the U.S. Chemical Safety and Hazard Investigation Board in Washington. "The word vigilance is quite important in this area." The board has been urging state governors to take steps to check chemical facilities.

Critics said Congress and the White House haven't done enough to force Y2K compliance by chemical companies. "It was more important to pass legislation to protect companies that create problems," said Leon Kappelman, head of the Society for Information Management's Year 2000 Special Interest Group in Chicago, referring to a Y2K liability-limiting bill signed by the president.

In a 10-year period, there were 600,000 chemical incidents that resulted in more than 2,250 deaths and 20,300

injuries. Of those incidents, 240,000 were caused by mechanical failures, but the U.S. Chemical Safety Board doesn't know how many were computer-related.

Computer systems disruptions can be critical. On June 10, a gasoline pipeline operated by Olympic Pipe Line Co. exploded in a park in Bellingham, Wash., killing two 10-year-old boys and an 18-year-old man, and releasing thousands of gallons of gas. The cause of the explosion hasn't yet been determined.

But the U.S. Office of Pipeline Safety said there were problems with the supervisory control and data acquisition system, which controls the pipeline, that may have inhibited operators from controlling the problem. An advisory was issued to all gas pipeline facilities. ▀

## Gartner Says Strides Made

BY RICK SAIA

The world has awakened to the year 2000 problem and is making great strides toward minimizing its effects come Jan. 1, according to a new Gartner Group Inc. report.

"We've seen tremendous change" in the U.S. and abroad, in many industries as well as in small and medium-size businesses, said Lou Marcoccio, Gartner's year 2000 research director.

Marcoccio presented the Stamford, Conn., information technology research and advisory firm's final Y2K report of 1999 last week. He predicted Y2K failures will increase in the second half of this year, peak in January and begin to trail off in next year's third quarter.

But come New Year's Day, Marcoccio added, few Americans will feel the effects of the date change. "We don't expect any real significant problems to the general public" on Jan. 1, he said.

Gartner also cited progress around the globe. It said many countries made "significant progress" on Y2K in the second quarter. But Marcoccio cited Russia and India as two large nations at highest risk of failure. ▀

# Internet Users Prepare for Y2K Problems

*White House says services will be OK*

BY PATRICK THIBODEAU  
WASHINGTON

White House assurances aside, corporate users aren't assuming the Internet will be year 2000 ready. They're making contingency plans, checking the status of Internet service providers and, in some cases, buying satellite telephones for backup communications.

The White House last week said it wasn't expecting significant Y2K-related problems with core Internet services — the backbone and the root servers that contain domain information. "The basic core of the Internet appears very likely — in fact, extremely likely — to function without difficulty" past Dec. 31, said John Koskinen, White House Y2K czar.

But he said the White House couldn't rule out outages among the 200,000-plus networks that make up the Internet.

Scattered outages aren't unusual. The system is redundant "and designed to survive disruptions," said Barbara Dooley, president of the Commercial Internet Exchange. In the Internet's favor is the relatively young age of its underlying technologies. It's "not saddled with legacy mainframe programs, languages and associated problems," she said.

Still, companies are being cautious.

Electric utilities, which share power-generating capacity schedules via an Internet-based application, have purchased satellite telephones to use in the event of Internet or telephone outages, said Ronald Parks, manager of computer operations at the Orlando Utilities Commission, a 160,000-customer electric utility in Florida.

But Parks said he believes competition is forcing Internet service providers to ensure that their systems are compliant. "I'd hate to be the only ISP that was down because of a Y2K problem," he said.

Charles Schwab & Co. in San Francisco has been checking the Y2K plans of its Internet providers. If problems occur, though, they will be helped by the fact that Dec. 31 arrives on a Friday, when U.S. financial markets will be closed for the holiday, company spokesman Greg Gable said.

Customers will be able to reach the company via telephone or through branch offices. "There is always an alternative way," Gable said.

Analysts said users should

be prepared. A company "needs to determine how long they could withstand a problem" with the Internet, said Lynn Edelson, a Y2K and risk management expert at PricewaterhouseCoopers in New York.

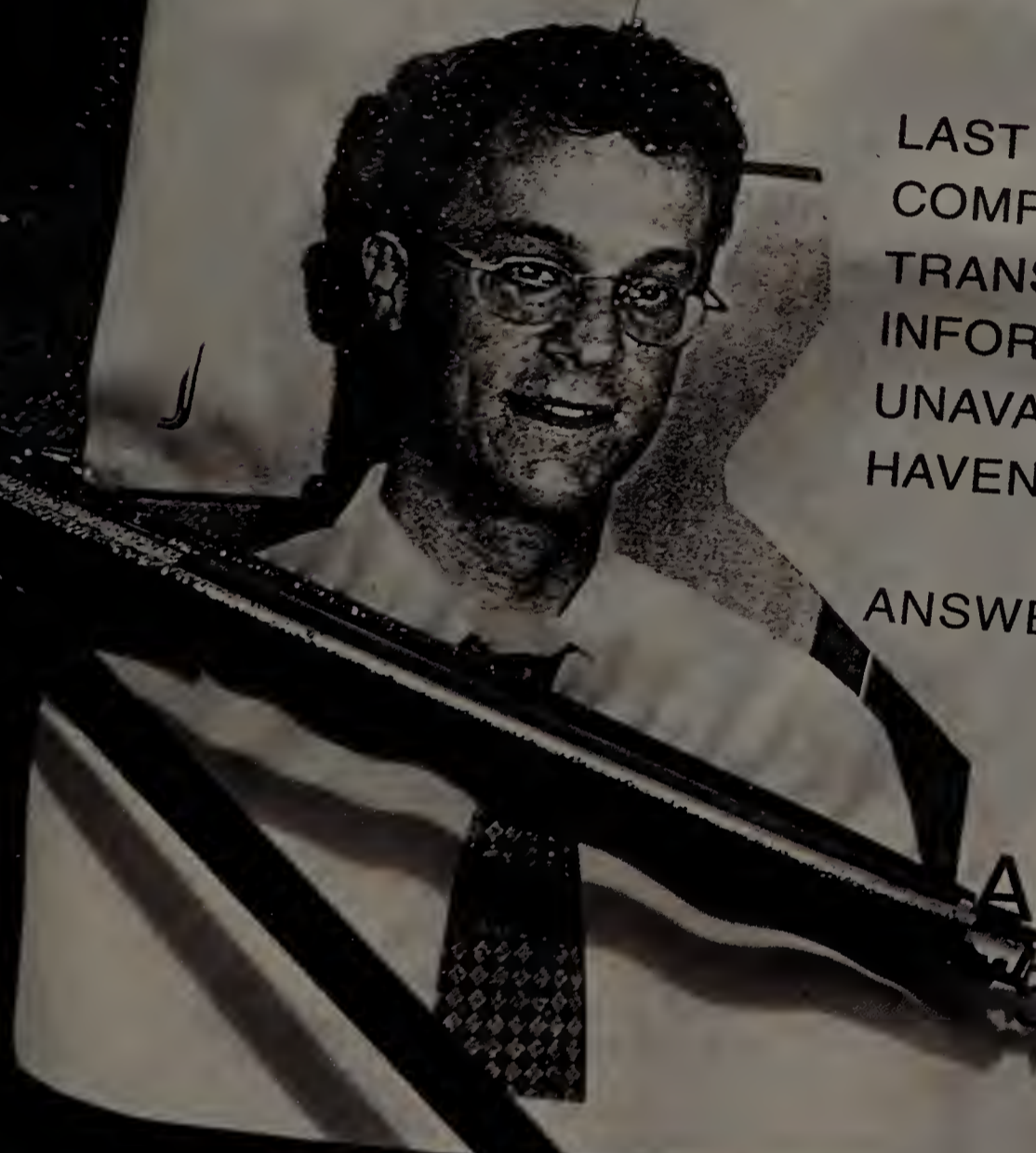
Of more concern, said Edmund Yee, network manager at Chevron Canada Ltd. in Vancouver, British Columbia, is power supply. Chevron will shut down noncritical parts of its network before the date change to prevent fluctuation damage. Although the company uses the Internet for e-mail, Web hosting and some transactions, "it's not something that is life or death for us," he said. ▀

## White House Advice

Some of the recommendations for year 2000 Internet readiness from a group of about 100 organizations and people involved in the Internet:

- Not all Internet service providers have reported their status. Users are advised to check with them.
- Companies with a critical need for Internet service should prepare contingency plans for access.
- Core services used by Internet service providers such as root name servers, exchange points and backbones are predicted to be year 2000 ready.

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# Walgreen's To Launch Internet Pharmacy

*Back-end integration effort will allow customers to pick up orders in stores*

BY JULIA KING

**W**ALGREEN Co., one of the nation's largest retail drugstore chains, will launch a new Internet pharmacy next month, joining arch rivals CVS Corp. and Rite Aid Corp. plus several new dot.com ventures in the charge to capture online customers.

In addition to online ordering, Walgreen's new Web site will give customers access to their prescription histories and information about medications from third-party medical sources, including the Mayo

Clinic. Walgreen's also plans to add more health and beauty products to the Web site by year's end.

Because the new Web site is fully integrated with the back-end systems used by the company's 2,700-plus brick-and-mortar locations, new and existing customers will be able to order online, then pick up their medicines at the neighborhood store, if they wish. This is one of the key capabilities that back-end integration affords hybrid retailers with both a real-world and online presence.

By contrast, pure-play Internet pharmacies, such as Belle-

vue, Wash.-based Drugstore.com and Planet RX Inc. in South San Francisco, Calif., take orders online for next-day delivery.

Walgreen's currently offers prescription refills on the Internet for existing customers only. The new, expanded Web site will allow customers to fill new prescriptions, which will be validated using the same computer systems the company's in-store pharmacists use to validate new prescriptions.

"There are a lot of steps involved in verifying a valid prescription and insurance information, which is part of what is required to accept new [prescription] customers online," said Tim McCauley, Walgreen's IT manager.

"There's no question that it would have been much easier

if we didn't have to integrate our existing back-end systems, but you really need to be combined to be of value to the customer," he said.

McCauley added that the integration effort, which involves tying legacy systems to Java-based Web application server software from Boston-based Art Technology Group Inc. has been under way for about a year.

Other drugstore ventures have been launched online as Walgreen's plowed ahead with

back-end integration. But analysts said that doesn't necessarily mean that Walgreen's is late to the online party — at least for a conventional retailer now spreading its wings to the Internet.

"It's hard to say they're late because I don't think very many brick-and-mortar retailers have figured out the right level of integration for their customers," said Vernon Keenan, an Internet analyst at Keenan Vision Inc. in San Francisco. ▀

## Survey Shows Corporate Use of Linux Nears 13%

BY DAVID ORENSTEIN

Corporate IT adoption of Linux is growing fast, but the free Unix variant still plays a much smaller role than the ones trusted to commercial operating systems, an analyst firm reported last week.

Linux is or will be deployed by the end of the year in 13.5% of the 788 North American corporations surveyed by International Data Corp. in Framingham, Mass. The survey, conducted at the end of 1998, found that Linux use has grown from statistical insignificance in 1997.

"Linux is still small, but its growth is amazing," said IDC analyst Dan Kusnetzky. Linux installations trailed those of other operating systems such

as Windows 3.1, 95, 98 (89.9%), NT (81.5%), NetWare (49.1%) and Unix (45.7%).

While corporate IT is warming up to Linux — mostly because of media attention and high-profile announcements of support by major vendors such as IBM and Hewlett-Packard Co. — the operating system is not as critical to information technology operations as others are, Kusnetzky said.

Rather than functioning as a general-purpose computing platform, Linux often runs one application such as a Web server. A report last month from the Gartner Group Inc.'s Dataquest arm also concluded that Linux will be most widely used in a singular "appliance" role [Technology, July 26]. ▀

### Click Here for Your Rx

COMPANY	REAL-WORLD PRESENCE	ONLINE PRESENCE
CVS Corp. Woonsocket, R.I.	4,100 stores	Bought Internet pharmacy Soma.com in May
Rite Aid Corp. Camp Hill, Pa.	3,900 stores	Partnership with Internet pharmacy Drugstore.com
Walgreen Co. Deerfield, Ill.	2,770 stores	Existing customers can order refills online; new Web site will allow online ordering with in-store and same-day pickup

## WingspanBank.com Counts on Simplicity

*Study shows banks lose users otherwise*

BY THOMAS HOFFMAN

Keep it simple, stupid.

That's more or less the mantra that Bank One Corp.'s Internet bank, WingspanBank.com, has been going by. WingspanBank.com, which was launched June 24, is trying to differentiate itself from other online banks by keeping site navigation very basic "instead of presenting every possible link a consumer might want on [our] home page," said Chip

Weldon, vice president in charge of content and design at the Wilmington, Del., outfit.

Perhaps WingspanBank.com is on to something. A survey of 2,000 U.S. adults released last week found that more than half the people who stopped doing online banking within the past year did so because they found the service too complicated or they were unhappy with the quality of customer service.

The study, conducted by New York-based Cyber Dialogue Inc., also found that although online banking has swelled to 6 million customers over the past year, another 3

million people have opted to discontinue their service during that period.

Although Bank One will continue to maintain its own site to provide services to its existing customers, it decided to create Wingspan as a separate unit to attract "millions" of new customers who don't need a brand name to bank online, Weldon said.

One of the differentiators of the Wingspan site: visitors can fill a "shopping cart" similar to those used on Amazon.com's site and check off bank products about which they would like to receive more informa-

tion, Weldon said.

To build the Wingspan site, Bank One chose five senior executives from the firm's First USA credit-card subsidiary. The thinking was that First USA has maintained a "start-up mentality" as it has grown from about \$4 billion in receivables in 1993 to more than \$70 billion, said William Wallace, WingspanBank.com's CIO.

Wingspan's executives selected its vendor partners within a matter of weeks, unlike other banks that get mired in overanalyzing which vendors to work with, Wallace said. "We wanted to work with [vendors] who work at Internet speed and whose technologies are enabling," he said.

Though Wingspan execu-

tives declined to quantify its investment to date, a company spokesman said the unit expects to add up to \$150 million to Bank One's expenses this year.

Bill Bradway, an analyst at Meriden Research Inc. in Newton, Mass., pointed to American Express Co. as another big institution that recently moved quickly to launch an Internet bank ([www.home.americanexpress.com/banking](http://www.home.americanexpress.com/banking)).

Wingspan has already lured "thousands" of customers in less than two months, "and its outlook is good," said Joan T. Goodman, an analyst at the Pershing division of Donaldson, Lufkin & Jenrette Inc. in Chicago. ▀

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# Database to Aid Kosovo

*U.S. scans phone books to reproduce destroyed data*

BY KATHLEEN OHLSON

**T**ECHNOLOGY and telephone books may play a key role in helping ethnic Albanians rebuild their lives in Kosovo after Serbian forces destroyed property, personal papers and public records there earlier this year.

Volunteers from libraries across the U.S. are collecting phone books and scanning them to create a database with the names and addresses of Kosovars before the war.

That should help restore administrative records and settle legal disputes over property or inheritance claims, as well as assist in creating voting lists for elections next year, said Andras Riedlmayer, bibliographer at Harvard University's Fine Arts Library.



**A MAN SURVEYS damage in Kosovo. A U.S. group is creating a database with names and addresses of Kosovars before the war**

Riedlmayer is overseeing the collection of the books and the creation of the database, which will be put onto CD-

ROM for organizations to use.

A group of U.S. librarians originally conceived the project for demographic purposes in the former Yugoslavia, he said. The last census, in 1991, was canceled because the Serbian war

broke out, so they intended to help with the 2001 census. The librarians decided to expand the project when initial reports from Kosovo said ethnic Albanians were being expelled and their identification papers confiscated and destroyed, Riedlmayer said. Public records, such as birth, marriage and prop-

erty certificates, were also burned.

Phone books in Albanian and Serbo-Croatian, the two main languages spoken in Kosovo, have been found dating as far back as 1968. The information may be outdated, but the books contain names and addresses of ethnic Albanians for the past 15 years, Riedlmayer said. "If the records show where the person lived for the past 15 years or so, it strengthens their claims they own a place," he said.

Norman Ross Publishing Inc., a New York-based microfilm company, donated its services and is handling most of the data processing, Riedlmayer said.

To create the database, books are photographed, placed on microfilm and then scanned from an image into text, said Lee Mandell, a computer support specialist at Harvard University's art museums. Information will later be parsed in the database, with volunteers interpreting the correct fields of names, addresses and phone numbers, Mandell said.

Approximately 60 directories have been filmed or are being filmed, but the project is awaiting funding from various government agencies, Riedlmayer said. Volunteers hope to complete the project by the end of this year. ▀

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## Tools Donated to Fight War Crimes

*\$3.5M in hardware, software  
to help prosecution efforts*

BY STEWART DECK

The United Nations War Crimes Tribunal has received a donation of approximately \$3.5 million worth of hardware and software to help speed the collection and analysis of war crimes evidence.

"This donation changes the face of how war crimes prosecution will take place in the future," said Pierre Prosper, special counsel to the Ambassador at Large for War Crimes Issues, in a press conference at the Suffolk County district attorney's office in Boston last week.

The new equipment will help the tribunal's war crimes investigators share investigative data through a 128-bit encrypted wide-area network that will link offices in Rwanda, The Hague, the former Yugoslavia and U.N. headquarters in New York.

The current network consists of three elderly servers and software developed in-house. Investigators use it to compile all types of data, including crime-scene evidence reports, victim statements and criminal photos.

With the amount of data the current system holds, it can take as long as 15

minutes to log on to the system and three to five minutes per inquiry, said Michael Johnson, director of the Criminal Resource Center, a Concord, N.H.-based nonprofit corporation that helps provide equipment for the tribunal prosecutors.

"This is very difficult work, so it is heartening to know that people are willing to assist our efforts," said Graham Blewitt, deputy prosecutor to the International Criminal Tribunal for the former Yugoslavia.

When the system is in place in the late fall, it will allow tribunal officials to communicate quickly and securely instead of flying prosecutors and investigators back and forth between sites for private communication, Blewitt added.

The new system hardware includes two IBM AS/400 servers, an IBM Netfinity server and 50 IBM Network Station thin-client terminals.

Digital Descriptor Systems Inc. in Langhorne, Pa., is providing crime scene software that will let investigators diagram crime scenes, and Orlando-based HTE Inc. will provide another software package with applications for investigation management, statistical reporting, prosecutors, court systems and jail systems.

Electronic document imaging capabilities are being provided by Irvine, Calif.-based Formation MG. ▀

# Net Partnerships Key to HP Momentum

*Company announces better-than-expected performance, moves to form alliances*

BY JAIKUMAR VIJAYAN

**S**TRONG hardware sales powered Hewlett-Packard Co.'s better-than-expected performance last quarter.

But a lot of the momentum going forward will depend on how well the company executes on the series of Internet partnerships it has entered into during the past several months.

HP last week announced a profit of \$853 million on revenue of \$12.2 billion for the quarter that ended July 31. The numbers reflect a 37% increase from the profits of \$621 million in the same quarter last year and an 11% boost from its \$11 billion revenue of a year ago in the same quarter.

Much of the growth came from strong demand for the company's commercial PC and high-end Unix server lines —

including its N-Class HP 9000 servers launched in April — and double-digit growth in HP's printing and imaging business.

The performance suggests that HP's efforts to unite its various computer divisions under an Internet umbrella may finally be giving the company a more focused message, said Jonathan Eunice, an analyst at Illuminata Inc., a consultancy in Nashua, N.H.

It "gives users a reason to move forward with the company," as they implement e-commerce applications, Eunice said.

HP may also be benefiting from beleaguered rival Compaq Computer Corp.'s woes, said Laurie McCabe, an analyst at Summit Strategies Inc. in Boston (see story, page 8).

"Compaq's problems play to HP's advantage," McCabe said.

"While Compaq is sitting there trying to rationalize operating systems and product lines, HP can go [into customer sites] and say, 'Our story makes more sense.'"

## Ambitious Plans

To capitalize on its recent momentum, though, HP will need to execute well on its ambitious plans — particularly where partnerships are concerned.

Just last week for instance, HP added one more company — Oracle Corp. — to a rapidly growing roster of Internet partners that includes software vendors, channel partners, Internet service providers and application hosting companies. Under the partnership, the companies will work on integrating Oracle8i and related Internet products with HP technologies like its E-speak brokering software.

The alliances are aimed at

quickly giving HP Web application software, middleware and service capabilities it lacks on its own, while at the same time increasing the market for its hardware products. Alliances with companies like B.E.A. Inc. in Pittsburgh give HP quick access to crucial middleware technology for Web environments.

At the same time, the company is hoping to push more hardware through Internet service providers and application hosting services through various partnerships and innovative financing schemes [Page 1, Aug 16].

## HP Heads Up

*Hewlett-Packard's performance for nine months ended July 31*

	1998	1999
Revenue	\$34.8B	\$36.3B
Net income	\$2.2B	\$2.7B

SOURCE: HEWLETT-PACKARD CO., PALO ALTO, CALIF.

"The real challenge for HP is to make these things work at the field level," Eunice said.

"We think they need to show some kind of positive results from these partnerships in about six months time," McCabe added. ▀

# Dell's Direct Juggernaut Helps It to Record Quarter

*Compaq losing to Dell on some business accounts*

BY MATT HAMBLIN

Analysts believe Dell Computer Corp.'s direct distribution juggernaut helped boost the company's fiscal second quarter earnings to record levels, above their projections.

The Round Rock, Texas, company last week reported profits of \$507 million for the quarter that ended July 30, a 47% increase over the \$346 million of the same quarter a year earlier.

Dell officials also boasted that their company has surpassed Compaq Computer Corp. in PCs shipped in the

U.S. for the period, but an analyst at International Data Corp. in Framingham, Mass., said Compaq is still leading "by a nose" for that distinction.

Dell's hegemony has come partly at the expense of Compaq in Houston and several smaller PC makers. Compaq has posted two disappointing quarters and recently an-

nounced up to 8,000 layoffs. And it clearly has been a target of Dell marketing teams, analysts and users said.

"Dell is absolutely carving a wide swath through Compaq business accounts," said analyst Rob Enderle at Giga Information Group Inc. in Santa Clara, Calif.

Last week, Toyota Motor Sales USA Inc. in Torrance, Calif., announced that it has signed a three-year contract for 2,500 Dell desktops, some servers and storage products for an undisclosed sum. A week earlier, Amazon.com Inc.

in Seattle said it would be using an undisclosed number of Dell OptiPlex desktops, picking Dell over Compaq in bidding.

Officials at Digex, a \$12 million Internet service provider in Belts-

ville, Md., said at a Compaq server announcement this week that it plans to buy dozens of the new Compaq eight-way servers (see related story, page 8).

But the company might also purchase Dell servers, given Dell's direct model and stunning financial performance in the most recent quarter, according to Bobby Patrick, vice president of strategy at Digex.

"Dell's quarter definitely caught our attention, and if Dell continues moving into the enterprise space, we'll do what's best for our customers," Patrick said. Digex is already testing Dell Windows NT servers.

Analysts said the direct model Dell uses keeps expenses down because Dell carries only six days of inventory, compared with nearly five weeks for Compaq.

Operating expenses account for 23% of sales at Compaq, double the percentage for Dell, analysts said. ▀

## A Good Year So Far

*Dell's revenue jumped 42% over last year during the same period:*

	LAST YEAR	THIS YEAR
Revenue	\$8.3B	\$11.7B
Net Income	\$650M	\$941M

\* First two quarters in the fiscal year

SOURCE: DELL COMPUTER CORP., ROUND ROCK, TEXAS

## BRIEFS

### Lucent's Big Switch

Lucent Technologies Inc. last week agreed to buy Excel Switching Corp., a Hyannis, Mass.-based developer of an open switching platform for telecommunications networks, for approximately \$1.48 billion in stock. The Murray Hill, N.J., company will add Excel's programmable switches to its switching and access business unit.

### Cisco Continues Spree

Network giant Cisco Systems Inc. continued its aggressive buying spree with a \$143 million stock acquisition of MaxComm Technologies, a Chelmsford, Mass., provider of broadband voice and data technology for the Internet. MaxComm's products let Internet providers deliver high-speed services to users without installing additional wiring.

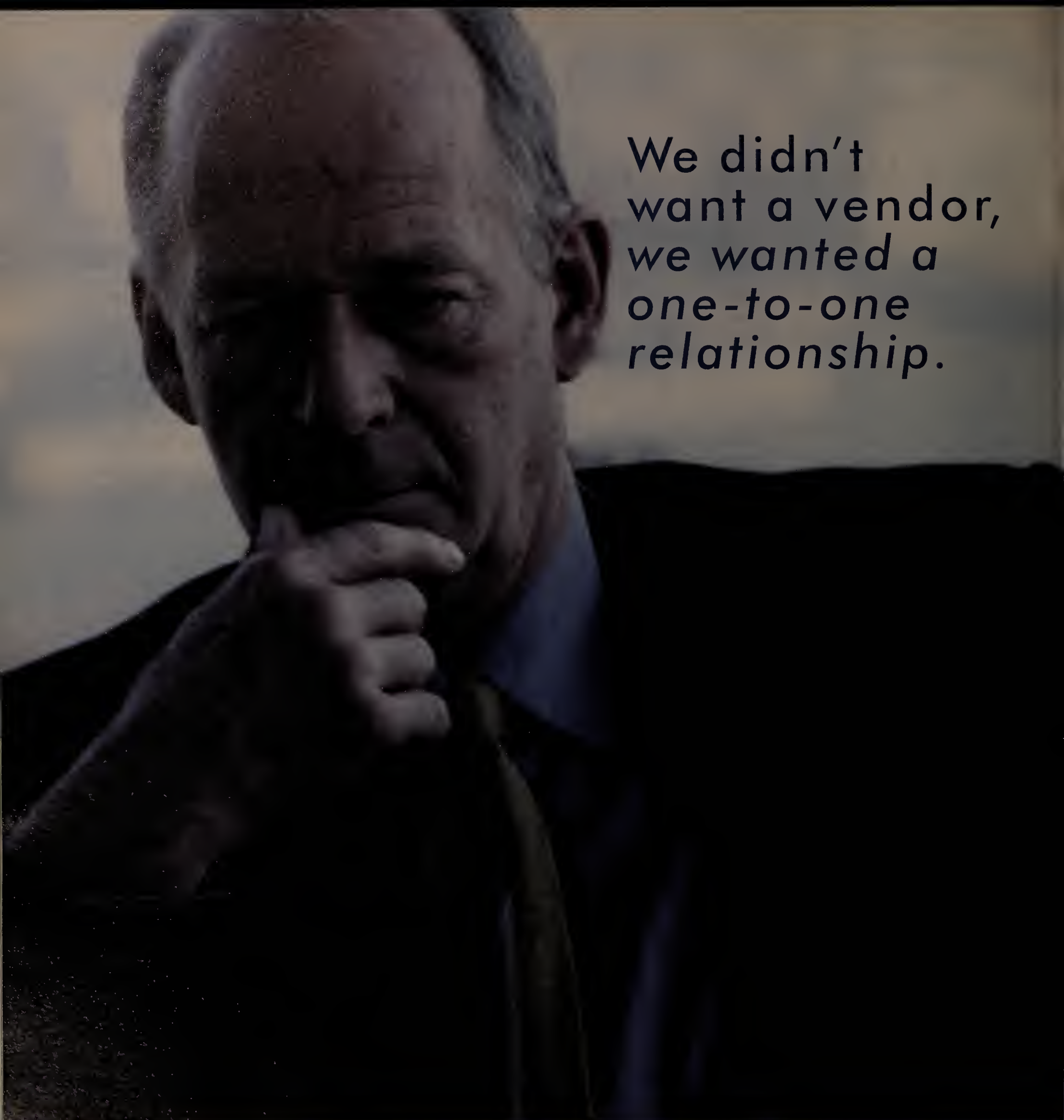
Cisco also spent \$49 million to acquire a 4% position in Akamai Technologies Inc. in Cambridge, Mass. Akamai's FreeFlow software is used by online content providers to boost a site's performance.

### Novell Net Rises

Novell Inc. reported revenue of \$327 million for its third fiscal quarter, ended July 31. That's a 20% increase over the \$272 million reported in the same quarter of last year, according to a Novell release. Net income for the most recent quarter was \$49 million, up from \$27 million in the same quarter in 1998.

### Short Takes

The Federal Communications Commission filed a brief last week supporting AT&T CORP., opposing a U.S. Federal Court decision to open broadband cable access to Internet competitors. . . . Internet portal LYCOS INC. posted its first profitable quarter in a year and a half with \$605,000 in profits on revenue of \$45.1 million. . . . MAXCOM LA INC.'s semiconductor division agreed to buy METROWERKS in Austin, Texas, for \$95 million. . . . IOMEGA CORP., a disk-drive maker in Roy, Utah, said Jodie Glone is resigning as president and CEO after 10 months in those jobs. Chairman David Dunn will take over while a replacement is sought.



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MARK HALL

# The Linux game

**M**IKE PRINCE has an excellent batting average when choosing emerging technologies. As CIO at Burlington Coat Factory, a \$2 billion retail outlet, Prince has jumped onto new platforms as expertly as Sammy Sosa whacks fastballs. And he's not afraid to go public with his risky adoption of leading-edge technology.

Back in the 1980s Sun Microsystems liked to put Prince on the dais to tout the virtues of Unix when everyone else thought it was just an operating system for techies. He later embraced Java as the foundation for new applications and was an early advocate of its potential.

Now he has discovered Linux and is broadcasting its virtues ["Burlington Coat Factory Finds That Linux Runs Smoothly, Despite Lack of Support," News, Aug. 9]. He thinks he's hit another home run with the popular open-source operating system.

But be wary of getting caught up in the Linux hype machine. Like any promising farm league rookie, Linux needs seasoning before making it in the big leagues.

A recent study by International Data Corp. has discovered that Linux servers have gone from near zero to 13% market share in two years. All the major system vendors have become big fans of Linux, adding it to their



MARK HALL is Computerworld's West Coast bureau chief. You can contact him at [mark\\_hall@computerworld.com](mailto:mark_hall@computerworld.com).

product service offerings, porting it to their various processors and even selling it directly to their customers. Some companies, such as SGI, have even made it a core part of their business. And Intel sees it as strategic platform for its current crop of Pentium chips and its upcoming IA-64 processors.

Most CIOs are acquainted with open-source technology. Products such as Perl, Tcl, Sendmail and Apache have crept inside most large organizations in the 1990s,

often surreptitiously, much like PCs did in the 1980s. But it's Linux that gets the most attention because, as an operating system on par with Windows NT and Unix, it's the most visible and potentially the most disruptive to a company.

CIOs who don't plan on how to manage the Linux intrusion may find themselves playing catch-up, as many are now doing with the Web. ▀

ALLAN E. ALTER

# With knowledge management, modesty's best

**S**IGH. I used to have such high hopes for knowledge management. Now I hope that someone will just put the poor dithering thing out of its misery and allow the rest of us to move on.

I think we saw some of that going on in our Aug. 9 issue. In a guest column that week ["Who's in Charge of Knowledge Management?" page 33], author Jim Botkin acknowledged the poor success rate of knowledge management projects. And in a separate story ["Please Don't Call It Knowledge Management!" page 50], knowledge management pioneers like GM's Vincent Barabba told *Computerworld* that they've sworn off this head-sweller of a concept.

I suspect knowledge management as a Big Concept will wither soon. As the surveys by consulting firm Bain & Co. show each year, top executives are seeing less value from knowledge management than other management trends.

Another reason: The consultancies, which need Big Ideas to make Big Money, are already chasing other Big Concepts like e-commerce and customer relationship management. The diversion will cut off the flow of oxygen — I mean money — to knowledge management.

Finally, there's this: In the IT world, ideas die or slack off for three reasons. They fail too often (re-engineering), implementation becomes a huge nuisance (think "push" or CASE), or they pine away from lack of interest. Knowledge management is managing to do all three at the same time.

But though knowledge management is dying, there will be a post-KM world. The new approach from these folks seems to be this: Forget about trying to draw Corporate Knowledge out of Plato's cave and manage the amorphous beastie. Instead, scale down those grand ambitions and get specific. When you think about business problems or opportunities, could we do X if we know Y? If you can come up with a specific X and a precise Y, you may just have a shot at doing something useful. Don't pretend to be managing knowledge — just try to make use of what people know. That sort of sensible attitude tells me there



ALLAN E. ALTER is Computerworld's columns editor and department editor, managing. Contact him at [allan\\_alter@computerworld.com](mailto:allan_alter@computerworld.com).



will be such a thing as post-KM applications, just as artificial intelligence tools survived when AI, the Big Concept, crashed.

**But let's move on from knowledge management to opinion management. You read our columnists' opinions every week; now I'd like to read yours.** How can we best use the Web to help you get the most out of our columns, editorials and letters? You've got the power: Think about how opinions help you spot new issues, debunk flawed trends and get you thinking. Then send me your requests and complaints, your favorites and your brilliant ideas. Tell us what you look forward to and what you can't stand; tell us what works for you on our Web site or other sites. Please message me at [allan\\_alter@computerworld.com](mailto:allan_alter@computerworld.com), and thanks. ▀

DAN GILLMOR

## The MCI lesson: Did you back up your net today?

**M**CI WORLDCOM was in a world of hot water last week with some of its best customers after an outage in its frame-relay data service that disrupted thousands of businesses ["Outages Plague Irate MCI Users," Page 1, Aug. 16]. No doubt the lawyers are already gearing up for some major-league paydays, but the lessons in this mess shouldn't be lost on those of us who weren't directly affected.

Sermon: If you don't have a backup plan for your connectivity, you're risking your business.



DAN GILLMOR is technology columnist at the *San Jose Mercury News*. Contact him at [dgillmor@sjmercury.com](mailto:dgillmor@sjmercury.com).

And if you think only about price when you buy your connectivity or other data services, you're likely to pay a higher cost in the long run.

End of sermon.

The MCI outage is only the latest in a series of embarrassments in online and Internet services. The famous technical woes of eBay, the Web auction site, and a host of electronic-stock brokerages have

been a continuing story.

Maybe we shouldn't be surprised. Maybe this is just a logical extension of the fundamental unreliability of PCs, operating systems and applications software — just one more in a predictable series of customer-service scandals perpetrated in recent years by the technology industry, which has a consistently lousy record of customer service.

Somehow, though, we're more willing to put up with crummy PCs and PC software than with on-

line services that crumble when we need them. And for good reason. Data connectivity is an utterly essential part of our businesses, and an increasingly vital part of our nonbusiness lives. So why don't we treat it that way?

Consider the Chicago Board of Trade, one of the affected MCI customers.

According to various news reports, CBOT was enraged because it had to shut down some of its operations. Amazingly, however, it appeared that CBOT didn't have a backup service to switch to instantly in the event of a long outage.

Consider as well the consumer angst when eBay and the various electronic brokerages suffered their well-chronicled crashes. We are delighted to be able to trade stocks for a fraction of what full-service brokerages charge. We revel in the millions of free listings on auction sites. And yet we complain when all those zillions of hits on the site bring down a system that clearly wasn't designed to handle it. And, of course, we utterly fail to note that there may be a connection between low prices and shoddy service.

Internet companies have been in the business of building a customer base, first and foremost, and only later — if ever — worrying about reliability. If customers, consumer and corporate, start caring as much about service as price, we'll get better reliability.

The various outages also point up one of the fundamental realities of the Net: It's a chain, and the old saw about the weakest link is more true than ever. But the Net also finds ways to route around damage, and customers of Net companies should take advantage of that. Businesses need backup plans for more than archiving data; they need backup connectivity, too. Or their contracts with providers should include stiff penalties for unreliability.

My home Internet service provider costs about \$10 per month more than the typical rate. I can't remember the last outage that took longer than an hour or two to solve, and I never fail to connect when I dial in.

Does the expression "You get what you pay for" ring a bell? ▀

## READERS' LETTERS

### Void copyrights of noncompliant vendors

**J**OHAN KLOSSNER'S cartoon depicting an online auction for the Y2K bill in Congress [News Opinion, July 12] stimulated my thinking: Since copyright laws are for the benefit of the common welfare, and since we want to encourage companies to make software Y2K compliant before Jan. 1, 2000, let's pass a law that penalizes noncompliant vendors by voiding license restrictions and copyrights. Instantly, you give the industry a powerful incentive to fix its software, and provide users with a powerful remedy in case a vendor is unable or unwilling to make the required fixes.

**Bill Patterson**

Principal consultant  
Stratford Technologies Inc.  
[patterson@computer.org](mailto:patterson@computer.org)

### Apache runs on OS/2

**I**N DORTE TOFT'S article about Apache ["Apache Developers Form New Monitoring Group," Technology, July 12], the following state-

ment is made: "The not-for-profit foundation will monitor development of the Apache HTTP Server, which is free software that runs on Windows NT and Unix, including the Linux flavor." This statement would lead someone to believe that these are the *only* supported platforms for Apache. Actually, there is an OS/2 version of Apache available.

Biased reporting like this propagates the myth that OS/2 is dead. Please give all the facts about the products and platforms you are covering, and let people make their own decisions.

**Phillip Rhodes**  
Shallotte, N.C.

### IT temps are there when you need them

**W**E HAVE heard the basic theme that employers prefer to hire permanent information technology workers rather than contractors ["Contractors Need Not Apply," Business Careers, July 5] again and again for many years.

However, what does a

company do when the job is not getting done and the company expects some payback for the new system it is developing? The company usually hires contractors to fill that role.

This article is full of people saying they are hiring only permanent staff, but all of these people are still looking to fill their positions. Is it better to not get the job done and wait for a permanent person?

**Alan Strong**  
Commercial Programming  
Systems Inc.  
Los Angeles  
[al.strong@cpsinc.com](mailto:al.strong@cpsinc.com)

### EIS all over again

**R**OBERT L. Scheier took the words right out of my mouth with his column "Beware of Enterprise Portal Pitches" [News Opinion, July 26]. In my investigation of products of this type, the same thoughts occurred to me: Uh-oh, here we go again. Here's a super new information-delivery and -presentation mechanism, and oh, yeah, there may be some plumbing complexities behind the

scenes, but we'll take care of that. You want to see how many different data sources? Well, that may take a little longer.

Only two things have really changed significantly since the advent of EIS. Yes, Web-based front ends are indeed quicker to deploy than fat clients (but strangely enough, so are CICS green screens). And more data is now stored in relational tables, which are (technically) easier to access online than flat files or IMS databases. But presenting and making sense of data in RDBMS tables is still not "plug and play" — ask any data warehouse users.

**William J. Lewis**  
Cambridge Technology Partners  
Pittsburgh  
[blewis02@ctp.com](mailto:blewis02@ctp.com)

**COMPUTERWORLD** welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Allan E. Alter, columns editor, Computerworld, P.O. Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931. Internet: [letters@computerworld.com](mailto:letters@computerworld.com). Include an address and phone number for immediate verification.

ANDREW BORTS

## Where are the programmers of the 24th century?

SPACE — where no programmers have gone. Ever. Thanks to all those sci-fi programs and movies, we have a plethora of biologists, physicists and chemists. Doctors are studying exobiology like mad. Our universities are filled with electrical and mechanical engineering wanna-bes practicing their Scottish accents. Where are the programmers? Nowhere.

When *Star Trek: The Next Generation's* Captain Picard logs on, he just looks up



ANDREW BORTS is a computer consultant and a Trekkie in the Fort Lauderdale, Fla., area. Contact him at [andrewb@sysctl.com](mailto:andrewb@sysctl.com).

into the sky and speaks. The computer seems to program itself. Hey! That means 300 years from now, I'm out of a job! That's not fair!

This is disturbing. You know that they have computers in outer space, but they seem to have only aliens working on

them. Frankly, I work too darn hard at my job to be put out of work by some alien.

Do they have an H-1B visa problem in the future? "Oh yes, we're having a terrible Y2K problem, but we need to get those guys from that other planet to fix it for us cheaper." These are things you just never hear of.

They have too many superusers who do too much work on their own, and I can't trust their results.

Watching the captain's science officer "reprogram" the ship's computer in just a few moments sounds off all sorts of alarm bells in me. I know from personal experience that users make the worst programmers. I don't care how logical they are because of selective breeding, there's always flaws in how they want to accomplish their tasks. Without following any human or alien top-down methodology, they start programming somewhere you couldn't find with a scanner. How illogical!

Just once, I'd like to hear someone hit their Starfleet emblem and shout, "Those Nausicans need the figures from astrophysics printed out in 30 minutes, or we'll be blown up." Or how about "Without a new screen for Commander Lefty, we won't be able to maneuver out of space dock."

These may sound too emotional, but, frankly, have you listened to some of the demands of our users? No matter what, it sounds like we'll still be blasted with phasers.

So where did the programmers go? Maybe they're hidden in a little room in the center of the ship with no windows, locked to their terminals. Only authorized personnel with the highest clearance are allowed to enter. To ensure that nobody leaves the room, it's surrounded by powerful force fields. These people work 24 hours per day on all the unusual, impossible tasks. After completing their tasks, they send messages to the bridge letting the officers there know the status.

Hey — I just described how I work today. I'm gonna be sick.

I'm going to start demanding that action-adventure movies be written about us computer nuts. Our lives are far more exciting than most people's. When I complete some of my programs, I'm Luke Skywalker, holding my light saber over my head. When I figure out how to make some interface work, I'm Wile E. Coyote, super genius.

But when I arrive home late and my dinner has dried up like a raisin, my name is mud.

Because they don't have to reboot things in the future, maybe they use only AS/400s. If that's true, then the future is a bright one indeed. ▀

MARTIN BUTLER

## CRM isn't a magic bullet for customer loyalty

COMPANIES HAVE a long history of throwing technologies at problems that can be solved only by changing hearts and minds. Many businesses are about to do that again with the latest hot technology: customer relationship management (CRM).

CRM is the latest in a long line of applications designed to improve business effectiveness. The basic idea is that you need to reorient your business processes around your customers. In this way, you might be able to get an integrated view of their interaction with your company and use that to your advantage.

It's a large and necessary task by any standards,

but it will by no means prove to be a sufficient mechanism for ensuring customer loyalty and retention.

There are two basic problems with this well-publicized approach. The first, and in many ways most obvious, is that many businesses are just not customer-oriented, and installing a CRM system will provide them with little advantage.

Let me give you an example. About 10 months ago, I purchased a Xerox copier-fax-printer for home use. A few months later, it gave up the ghost. Unfortunately, I had lost the receipt, and the retailer asked me to phone Xerox directly. What a prime opportunity for Xerox to learn something about me and establish some kind of relationship. Instead, all I got was a young lady named Kelly, who told me she could do nothing without proof of purchase. Opportunity knocked — but was ignored. I'm sure that Xerox business managers attend courses on CRM, but CRM won't make companies actually give a damn about their customers.

The second, and actually more threatening, issue is that the Internet is putting many suppliers side by side in cyberspace. Customers will go for the best deal, no matter how much you try to CRM your relationship with them. Large corporations may sniff the vapors of CRM opium to ease their fears, but it doesn't change the basic equation: If you don't provide the best deal, you won't get the business.

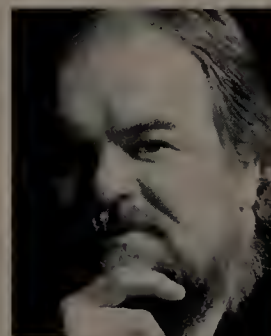
Indeed, CRM is an open invitation to blunder, as Lufthansa did recently when it thought that sending its customers a newsletter seemed like a good idea. An article contained in the newsletter explained how, through overbooking, only 2% of Lufthansa customers could expect to miss their flights.

That's on par with Lufthansa's little guide to the U.K., which explains that fish and chips and turtle soup are two favorite British dishes. Turtles aren't very common in British waters.

Perhaps the most significant factor on the Internet affecting relationships with customers is the emergence of a new breed of intermediaries. Companies such as Compare.net, Edmunds.com and Priceline.com are merrily turning the electrical goods, automobile and travel markets into commodity markets. The number of subscribers to these services is growing exponentially, and the traditional suppliers are being turned into commodity shifters that get no business if they don't offer a competitive price and service.

We can also add to this the trend toward dynamic pricing models. Pretty soon, it will no longer be "Here is my product, and it will cost X." The new model will be "Here is my product. How much will you give me for it?" Your business will then have to decide whether it wants to trade at that price. EBay and many other new auction-based Internet services are driving this model, and it will soon be commonplace.

So how is CRM going to help with all this? If CRM is simply a consolidation and reorientation of what you already do, you might simply be wasting your money. CRM has to become something totally different from what it is right now. ▀



MARTIN BUTLER is chairman of Butler Group, a European IT analyst company, and author of the free "Contra" newsletter ([www.butlergroup.com](http://www.butlergroup.com)). Contact him at [martin.butler@butlergroup.com](mailto:martin.butler@butlergroup.com).

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# E-Business Services *BRIEF*

## Leveraging Your Legacy Systems for E-Business

*With careful planning, old systems can be taught new tricks*

*Stephanie Moore is Director, Giga Information Group, in Cambridge, MA and one of the leading experts on Y2K remediation. We interviewed her on the issues surrounding the use of legacy systems in e-business environments.*

**CW:** What are the primary issues related to leveraging legacy systems in the e-business world?

**MOORE:** Companies have spent the last several years and significant amounts of money renovating mission-critical legacy systems for Year 2000 compliance. As they finish up these projects, they realize a couple of things. One is that there is now a huge application backlog that must be dealt with, and the other is optimizing the Internet as a competitive weapon. So, to rapidly deal with the application backlog and to take advantage of the cost benefits associated with the Web, many organizations are attempting to leverage, rather than rewrite their legacy systems by extending their reach and their use. Rewriting legacy applications from scratch takes too long, costs too much, and in some cases, requires a whole new set of skills.

**CW:** Are some of these pre-ERP systems?

**MOORE:** Sure. A lot of companies are saying, "I have this old mainframe that contains years worth of critical data. Given my time constraints, how can I get this system out to the Web so that my customers can have access to it? Or how can I use it to take orders on-line, so that the customers can serve themselves? I don't want to rewrite this huge system but maybe I can extend it or reuse parts of it."

**CW:** What's the answer? What can they reuse?

**MOORE:** There is a plethora of options, starting with some more tactical, browser-based, screen-scraping techniques that will enable companies to give external customers access to these legacy systems. Previously, these systems were only accessible to internal users, and generally, a select group of internal users. Now there are technologies that allow companies to take those systems and safely deliver them not only to all internal users, but to external customers as well. At a more strategic level, companies can extract and reuse important logic from their legacy systems. These extracted components can be wrapped and reused in new applications development so that this legacy functionality doesn't have to be recreated.

**CW:** What are some of the pitfalls that users encounter in this kind situation?

**MOORE:** One of the big problems with these types of scenarios is that companies will sometimes find a tool or a technology solution and look for a business problem to solve using the technology. Companies should instead be taking a business driver—cost initiatives, customer relationship management, systems consolidation—and mapping that to a technology solution.

**CW:** Provide an example of a business driver for legacy renewal.

**MOORE:** An important and common example of a legacy renewal business driver is simplifying and expediting system consolidation. Many companies find themselves with a variety of business systems gained through acquisition or merger. It is not unusual for these systems to be performing similar functions for different companies in the corporation. So, they are attempting to determine which systems perform which key business functions, which of these functions are duplicated, and which systems have the best structure for extending. They are then planning to extend systems to deliver all the capabilities that were previously duplicated. By analyzing and harvesting the important business logic from each, companies can more easily merge the relevant pieces of each system into one without building an entirely new system.

**CW:** In the course of retooling their systems for Y2K, have a lot of users had the foresight to build in e-commerce-type capabilities?

**MOORE:** That's an excellent question. And I must say that early adapters—the Y2K folks who worked on these projects early enough—fixed their systems more strategically than the laggards. In many cases, they cleaned up their code, eliminated redundant code, developed appropriate test environments and documented their systems and their efforts appropriately. Some of them used repositories to store critical system information which could be used later for such things as data warehousing or new systems development.

**CW:** As a result of their foresight, what current advantages do those companies have?

**MOORE:** Those companies are now in a great position to leverage these Y2K legacy renewal efforts.

They've got the base, and their code is structured and lends itself to componentization. They've got information about the code and its relationship with the data. They also have documentation. This means in some cases that they will be able to separate the presentation logic from the application and data access logic. So, for example, if they just want to replace their existing interface and rewrite it in Java, they are able to strip away the old interface logic and implement new logic.

**CW:** What other critical issues are there to consider?

**MOORE:** Skills are another big issue. Most companies have in-house IT staff with skills, such as COBOL programming capabilities, that allow them to maintain and develop their legacy assets. Many companies, however, do not yet have Internet/Web development skills, or distributed application development skills. As a result, building an e-business system from the ground up in an entirely new environment is extremely difficult because they need to either acquire these skills, or retrain their legacy programmers. This will add additional costs as well as time to any e-business development project.

**CW:** What does all this cost?

**MOORE:** It really depends on the projects, and the projects are so diverse. What I consider interesting about many of these projects—particularly the interface redesign or extranet types of projects—is that they are not extremely expensive, they do not require legions of programmers and they are very quickly implemented.

**CW:** If you could only give one piece of advice for people who are in the position of trying to leverage their legacy systems in the e-business world, what would it be?

**MOORE:** Identify your business driver and your business goal. Then, map that goal to some of the technologies that are available. There are a lot of vendors out there pushing point solutions and point tools. And, many of these technologies are good. However, you need to know your requirements before you even begin to investigate whether the solutions are suitable for your organization. ■

## Optimum Mix of Services Key to Future Success

Successful organizations will increasingly rely on external IT service providers in order to implement "best of breed" solutions, reduce implementation time and improve business processes. However, choosing the right strategic partner becomes increasingly difficult given the myriad of available service options.

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ENTERPRISE BUSINESS SOLUTIONS

# BUSINESS

## OFF-LINE PITCHES

Data mining and other tools are giving some retailers the ability to personalize marketing as much off-line as on the Web. The idea is less to find new customers than to increase sales to existing ones. **▶ 39**

## INSURERS FIGHT FRAUD TOGETHER

Service companies in the insurance business are finding that cooperation on some fronts is beneficial. Several have pooled their reports to give insurers a greater ability to fight fraud; others are helping automate insurance agencies with low overhead. **▶ 39**

## VOLUNTARY SPAM

Spam has become almost useless as a marketing tool, and response to banner ads is dismal. But some users are finding that commercial mailings to customers who have agreed to be spammed can generate good click-through. **▶ 38**

## CLASS OF 1999

If the three grads we visited are any indication, employers will find imagination, drive, dedication and know-how in the new crop of IT staffers, who are getting snapped up before they're even out of school. **▶ 50**

## ERP LITE

Jim Champy writes that the next generation of ERP should be "ERP lite." He says ERP mak-

ers must create systems that reflect the minimal work a company needs to do as it moves through a process. **▶ 44**

## JARGON JUDGE

What's the difference between CRM, ERM and PRM? Not a whole lot, rules the Jargon Judge. She suggests vendors get off the acronym bandwagon before somebody gets hurt. **▶ 48**

## GOT QUESTIONS?

Career Adviser's got answers. This week, Fran Quittel answers questions on careers in IT asset management and choosing the right career path to become a CIO. **▶ 53**

## QUICKSTUDY

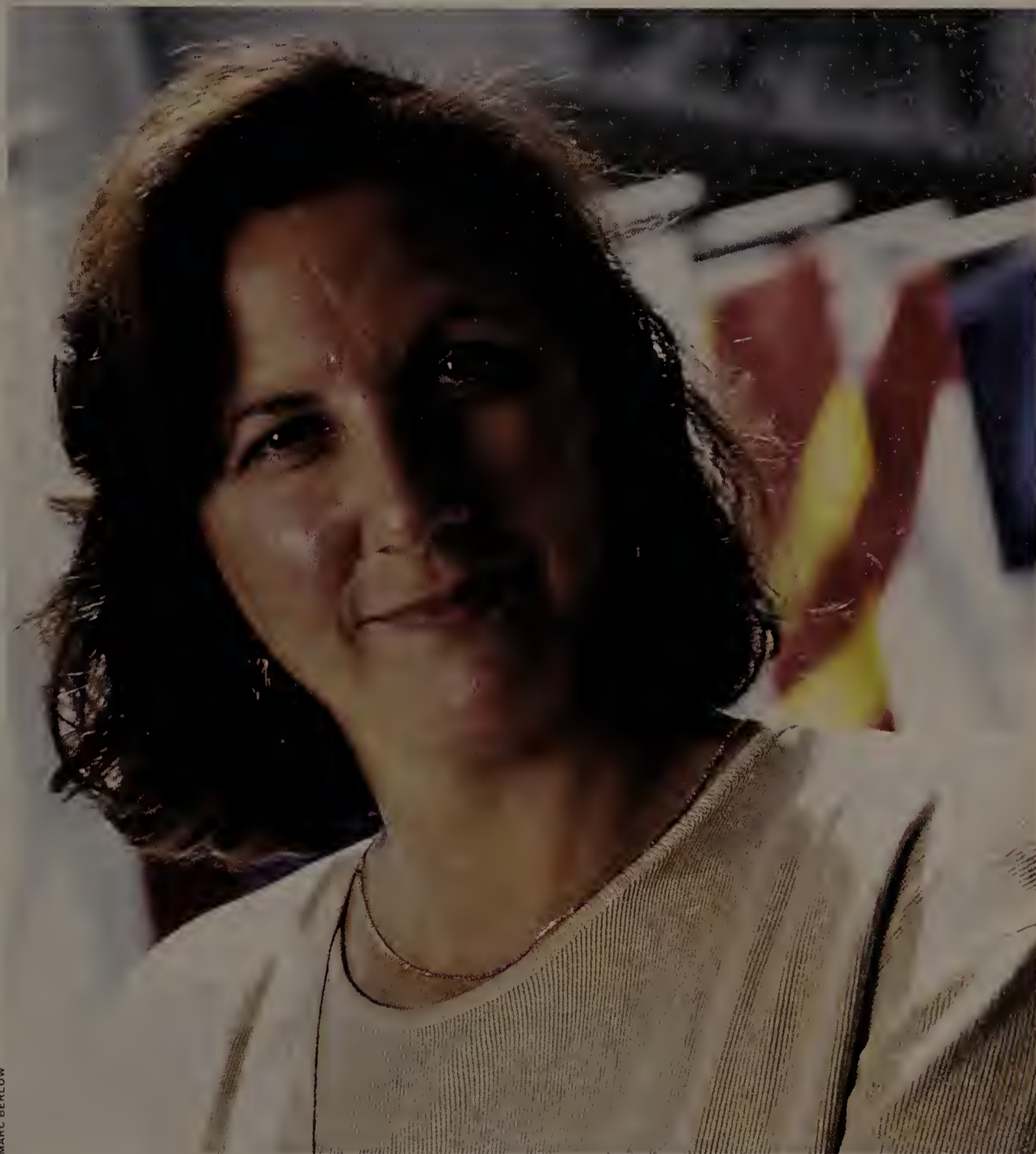
Vendor-managed inventory has been saving grocers and manufacturers costs for years, and now other businesses are experimenting with it. What is it and how can it work for you? Business Quick-Study gives you the basics. **▶ 52**

## CERTIFIED E-MAIL

Certified e-mail services from UPS and companies like Certified-mail.com could take a bite out of traditional mail and FedEx income. It's potentially a multi-billion-dollar market, analysts say. But it needs supporting legislation to be viable. **▶ 38**

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MARC BERLOW

## READY FOR THE Y2K-WORRIED?

**CUSTOMERS WILL BESIEGE** your call centers and service desks with all sorts of Y2K questions and demands. How will you handle them? Employees have to know the key messages "and deliver them with confidence," says Becky Siewert (pictured), Y2K communications manager at Comerica Bank in Detroit.

46

# Secure E-Mail Delivery Poised To Take Off

*Technology could make printed confirmations a huge potential market*

BY DOMINIQUE DECKMYN

After a slow start, the secure delivery of electronic documents may be headed for a boom, particularly in the legal and brokerage fields, some analysts said.

The concept is pretty simple: Instead of sending someone a document via e-mail or a hard copy by expensive overnight delivery or courier, an end user simply sends an empty e-mail message that contains a link to a secure Web site. The sender is notified as soon as the addressee accesses the document.

United Parcel Service of

America Inc. pioneered the concept about a year ago with its UPS Document Exchange service. Last month, UPS invested \$4 million in Tumbleweed Software Corp. in Redwood City, Calif. — the company that provided the technology for Document Exchange.

## The Competition

Other vendors are starting to eye the same space, including PostX Corp. in Cupertino, Calif., and CertifiedMail.com Inc. in Springfield, N.J. Certifiedmail.com charges \$10 per month for unlimited usage,

claiming it can offer better pricing because, unlike UPS, it has “no physical [mail delivery] model to protect.” UPS charges about \$1 per message.

Though more circuitous than basic e-mail, secure electronic document delivery systems are easier to set up than the alternative: secure e-mail encrypted with Secure Multipurpose Internet Mail Extensions (S/MIME), adherents claim. S/MIME still isn't widely used, and to secure communication it requires both parties to obtain digital certificates from a certification authority such as VeriSign Inc.

Jim Meadows, an attorney at Atlanta-based law firm Alston & Bird, has been using the UPS Document Exchange service since it was launched. “It's a

## JUST THE FACTS

### Secure E-Mail

*Rather than encrypting e-mail messages, secure electronic document delivery services work by combining traditional e-mail with secure Web sites*

- 1 Sender deposits document on secure Web site
- 2 Addressee receives notification by e-mail
- 3 URL in e-mail leads addressee to a secure Web site
- 4 Sender receives time-stamped confirmation of delivery

quarter of the price of next-day delivery,” Meadows said. He said he could see the technology “replace a strong majority of overnight deliveries” in the legal profession.

According to attorney Harry Rubin, head of the Internet Group at Shaw Pittman in

Washington, the UPS service provides a good way of ensuring that a document was actually delivered, allowing it to be used in the context of virtually any contract with a notice provision. Though that hasn't yet been tested in court, Rubin said, “Legislators and, I believe, courts will be very receptive to digital delivery.”

## Lots of Potential

The printed trade confirmations that online brokerages send their customers represent a huge potential market.

For the past few months, Ameritrade Inc. customers have been able to receive confirmations via the PostX service. Ameritrade President Michael Anderson said less than 10% of Ameritrade customers have so far opted to receive their confirmations in this way, but he said he expects that percentage to grow.

Anderson said the technology is still a little hard to use for customers. “It's a bit of a challenge to support,” he said.

According to Martin Marshall, an analyst at Zona Research Inc. in Redwood City, Calif., printed confirmations cost online brokerages \$1.25 apiece. Throw in the millions of legal and medical documents that get sent each year, and you get a market that could reach “the double-digit billions,” Marshall said. ▀

# Opt-In Marketing Tested

*E-mail services boost hits to retailers' Web sites, yield big returns*

BY DOMINIQUE DECKMYN

**S**PAM IS NOW widely discredited as a marketing method, and disenchantment with banner ads is growing, observers said. Some electronic retailers are turning to opt-in e-mail networks, which rent lists of people willing to receive pitches by e-mail, and are finding it to be a cost-effective marketing method.

In June, Melissa Cetero, Web site coordinator at Del Laboratories Inc. in Uniondale, N.Y., bought 15,000 names from a Chicago-based opt-in e-mail network called Yesmail.com Inc. Del, maker of the Sally Hansen line of cosmetics, offered addressees a free calendar application and a chance of winning \$30. The campaign boosted hits to the Sally Hansen Web site significantly, Cetero said.

A 4% click-through rate “is about the best you can get with a banner campaign,” said Cetero. “You can use an e-mail campaign and get 10%, and it's actually cheaper.”

According to Michele Slack,

## At Your Service

*E-mail marketing services include:*

TYPE	VENDORS	DESCRIPTION
Opt-in e-mail networks	Yesmail.com, NetCreations	Encourage consumers and businesses to sign up for commercial e-mail in specific categories
Incentive-based permission e-mail	CoolSavings, Netcentives	Offer incentives to consumers who agree to receive commercial e-mail
Customer retention and management	Digital Impact, MessageMedia	Maximize existing customer base, such as sending out customized newsletters

an analyst at Jupiter Communications LLC in New York, 10% to 15% click-through rates are typical for opt-in e-mail, while banners today score approximately 0.5%. Little reliable data exists on how many of these click-throughs are converted into sales, however. Opt-in networks charge about 25 cents per address for a one-time mailing.

Although e-mail marketing companies such as San Mateo, Calif.-based Digital Impact Inc. help companies build and manage their own opt-in lists to help retain customers, com-

panies like Yesmail.com and New York-based NetCreations Inc. promise to help find new customers. They offer online retailers lists of thousands — even millions — of consumers or businesses that have specifically asked to be sent marketing information about certain product categories. For instance, NetCreations lists include consumers who have signed up for any of 3,000 categories, from “Internet clients” to “tropical fish.”

Some opt-in networks, such as Chicago-based Cool-savings.com Inc. and San

Francisco-based MyPoints.com Inc., offer users incentives to sign up. Several players, including NetCreations, now claim to have more than 3 million addresses. Yesmail.com claims to have 7 million.

“The problem with e-mail [opt-in] lists is that they're very consumer-oriented,” said Chuck Condon, marketing manager at Officedepot.com, the e-commerce division of Office Depot Inc., which targets businesses. But early this year, Officedepot.com sent out a test marketing to small businesses registered on NetCreations. Click-through rates were well above 10%.

But Slack warns that companies should watch carefully to see exactly how opt-in networks collect addresses and make sure people on the list have really opted into it. Another key factor is the number of addresses.

“Until you have large enough size [as an opt-in network], you can't really be a player,” Slack said. The advice of Keith Butler, vice president at Officedepot.com: Try many suppliers, and experiment with small but statistically significant samples. “Test, test and test,” Butler said. ▀

## MOREONLINE

For more coverage of e-mail services and related Web pages, visit our Web site. [www.computerworld.com/more](http://www.computerworld.com/more)

## SNAPSHOT

### TechnoPolitics

*Of all the individuals currently running for U.S. president in the 2000 election, which one do you think would do the most to advance the U.S. as a technology leader?*

Al Gore	26%
Steve Forbes	18%
George W. Bush	15%
Bill Bradley	3%
Elizabeth Dole	3%
No candidate	30%
Others	5%

Base: Survey of 303 IT professionals and companies with 1,000 or more employees worldwide

# Stores Go One-on-One

*Like e-siblings, analyze data for marketing*

BY DAVID ORENSTEIN

SOME RETAILERS are shifting their marketing efforts from an "Attention shoppers!" approach to one that sounds more like "Hey, Joe! We know what shirts you like, and they're 10% off today." Using data warehouses, retailers are looking to establish relationships with individual customers, rather than launching broad promotions to many people.

The ultimate goal that retailers are approaching in their stores is the one-to-one personalization that's already achievable on the Web, said

analyst Donald Bellomy at Aberdeen Group Inc. in Boston.

Quality Stores Inc., a Muskegon, Mich., chain of 350 farm and garden stores, was able to increase the average spending of respondents to an experimental Mother's Day promotion by 47.4%, said sales director Helm Kraus. The store sent out custom newsletters that offered discounts on certain items — like benches — that Kraus' team thought would complement items each customer had bought in the past — like garden supplies.

The company has only begun to mine its 10-year, 200,000-customer purchasing

data in a Retail Target Marketing Systems Inc. Archer database. The database can help manage campaigns and includes reports down to the individual transaction level. But like most retailers, the company had devoted its energies to finding new customers, not increasing sales to existing ones, Kraus said.

Because the cost of acquiring a new customer is about 10 times the cost of catering to an existing one, retailers can win big by focusing on their star shoppers, Bellomy said.

Smart and Final Inc., a \$1.6 billion wholesale grocery chain based in City of Commerce, Calif., is testing the idea of offering specialized pricing to its 1.5 million card-holding customers. The company



**JUST FOR FEET'S David Meany** wants consumers to feel unique

would offer caterers a discount on napkins or janitors a discount on floor wax, said store systems director Bob Graham. The system will be built on top database and checkout systems provided by NCR Corp.

Just For Feet, a \$775 million sneaker retailer based in Birmingham, Ala., is also jumping

into the game. CIO David Meany said the company plans to buy detailed demographic data about its customers so that it can match product data and customer purchasing histories with vital sneaker-related statistics such as whether households have kids who play sports.

The data from Integrated Marketing Solutions Inc. in Nashville and the Corema targeted marketing software from London-based ICL will power targeted mailings from a 2.5T-byte warehouse that will offer consumers deals on products they might want and "make them feel like they are unique when they come into the store," Meany said.

To Graham, fine-grained marketing is the way of the future: "The companies that don't embrace the new way of thinking will be in trouble. There is only so much market share out there." ■

# Insurance Agents Tap Tools To Nab Crooks

*Software used to ID fraudulent claims*

BY THOMAS HOFFMAN

Thomas Mulvey smelled a rat.

Six months ago, the claims investigator at Prudential Insurance Company of America noticed that an insurance customer had recently filed 16 automobile accident injury claims with the Newark, N.J.-based insurance giant. Using an automated software tool to access a giant industry claims database maintained by Insurance Services Office Inc. (ISO) in New York, Mulvey was able to find another 72 claims tied to this person across 19 other insurance carriers. ISO provides statistical, actuarial and underwriting information and analysis to more than 2,900 insurers.

The search — using a fraud-detection tool called NetMap for Claims that Prudential has been testing — took 15 minutes to analyze and cross-reference more than 135 million claims in the ISO database.

Without the software tool, Mulvey said, Prudential would have had to assign two investigators to manually pour through stacks of claims records for a week to try to find a match.

Using NetMap and the ISO database, "we wind up with a tremendous increase in efficiency and let the computer find every needle that's in the haystack," said Mulvey, Prudential's national director of special investigative units.

Mulvey declined to provide details on the case, which is still in litigation.

Insurance fraud costs property/casualty insurers up to \$20 billion each year, according to ISO. To help fight fraud, ISO consolidated its claims database with

New York-based American Insurance Services Group and Palos Hills, Ill.-based National Insurance Crime Bureau (NICB), to create a massive database of property, liability and motor vehicle claims.

Nearly all insurers have access to the ISO database, but its integration with the NetMap search tool is new.

Because insurance companies were filing the same claims data to both ISO and NICB, merging the databases eliminated redundancy and made the resulting database more complete, according to Judy Johnson, an analyst at Meta Group Inc. in Stamford, Conn.

Perhaps the clearest exam-

ple of another industry in which competitors share information to reduce risk is the banking industry, where fierce competitors share credit histories when people apply for loans or mortgages, said Octavio Marenzi, research director at Meridien Research Inc. in Newton, Mass.

Westerville, Ohio-based Alta Analytics Inc., which markets NetMap, has been testing the integrated systems with Prudential and insurers such as

CNA Insurance Cos. in Chicago, Progressive Corp. in Cleveland and The Travelers Group in New York.

Prudential's return on its \$300,000 to \$500,000 investment isn't clear yet, but the system drastically cuts the time it takes to do investigations, Mulvey said.

The ISO estimates that by using NetMap against its claims database, early users have been able to obtain an 80 to 1 return on investment. ■



**MULVEY: Found needle in haystack**

## Small Insurers Opting To Outsource

For thousands of independent insurance agents who run lean offices, keeping an IT professional around to support their case management systems is a luxury they can't afford.

To solve that problem, some agents are beginning to outsource management of those systems to AgencyWorks, a Salt Lake City-based outfit that agents can access via the Internet.

AgencyWorks hosts a case management system called Agency Integrator that insurance brokers and agents can access via the Internet using a software package called Broker Gear, which runs on thin client machines. By outsourcing system management and case data, insurance agents can focus on their customers and not

have to worry about housing and maintaining bulky servers and storage devices in their offices.

One life insurance broker, The Brokers Source Ltd. in Pittsburgh, has been beta-testing the system since early July. The company expects to reduce its cycle time in underwriting insurance policies by using the Internet to communicate with insurance agents they represent during the underwriting process.

"We get paid faster by getting [policies written] faster, and agents are happier because their clients have faith in what they promised," said Lisa Jellick, a marketing coordinator at The Brokers Source, which works with about 30 insurance companies such as Zurich-American Insurance Co. in

Schaumburg, Ill.

Meanwhile, the seven-person company has been able to free itself of maintaining case management data. "We're a small brokerage, and we don't have the staff to manage the data. With the hardware we're getting rid of, heck,

we might be able to fit another person here," Jellick said.

Customers who use AgencyWorks' Agency Integrator system are billed \$1,300 per user seat per year. AgencyWorks' competitors include P.D.Q.

Inc. in Lynchburg, Va., and Select-Tech in San Francisco.

— Thomas Hoffman

## MORE ONLINE

For resources on insurance and thin client machines, visit our Web site. [www.computerworld.com/more](http://www.computerworld.com/more)



**JELICK: Agents happier**



HAL MAYFORTH

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**Need pens?  
Notebooks?  
Clothes for the kids?  
A few companies  
are going where  
some big retailers  
aren't — using the  
Web to take some  
of the late-summer  
stress out of back-  
to-school shopping**  
By Deborah Radcliff

**A**S GENE SCHULIS and his wife were shopping for their son's school supplies in the summer of 1991, a little girl staged a hissy fit right in front of them. Her mom couldn't find the purple folder the girl wanted.

The Schulises figured there had to be a better way. "We decided that we could talk to teachers and get a list of what they want for the first day of school, then provide an order blank for parents so they don't have to go shopping," he says.

And so, the Milwaukee-based School-Pak was born. But business really took off after the Schulises started merchandising on the Web. School-Pak ([www.schoolpak.com](http://www.schoolpak.com)) has enjoyed more than fourfold growth in four years, serving more than 250 schools in Wisconsin, Maryland, Oregon and Texas, Schulis says.

To the puzzlement of analysts, many large merchandisers including Wal-Mart Stores Inc. and Kmart Corp. are missing this seasonal opportunity. No back-to-school promotions or school supplies icons grace their Web pages. And word

searches on "school supplies" or "back to school" turn up nary a pen nor pad of paper.

"We don't have anything earmarked for back to school," a Kmart spokesman acknowledges. "But we're hoping to catch seasonal sales next year."

No projections are available for online sales of back-to-school supplies, per se. But Forrester Research Inc. in Cambridge, Mass., projects that next year, online consumers will spend \$2.84 billion on apparel, \$4.65 billion on media (software, books, music and videos) and just less than \$1 billion on consumer electronics.

But although general retailers may be missing this market, specialized retailers are beginning to dive in.

Web-savvy kids clothing stores like New York-based Delia's ([www.delias.com](http://www.delias.com)) and Dodgeville, Wis.-based Lands' End Inc. ([www.landsend.com](http://www.landsend.com)) are pushing back-to-school clothing on their Web sites. And office-supply stores such as Shaker Heights, Ohio-based OfficeMax Inc. ([www.officemax.com](http://www.officemax.com)) and Staples Inc. ([www.staples.com](http://www.staples.com)) in Framingham, Mass., are peddling classroom supplies on their sites.

Delia's is artfully cross-merchandising among its preteen and teen girls catalog, Web site and new retail outlets on the East Coast. The cover of Delia's July back-to-school catalog encourages girls to shop online by offering free mouse pads with Web orders and also references its Web site and other cool Internet hangouts on nearly every page.

"There are some sites doing really good with the kid set," especially Delia's site, says Scott Silverman, director of Internet retailing at the National Retail Federation in Washington. "They're good examples of retailers taking advantage of a multichannel strategy and making sure those channels are well integrated."

Fun promotionals are also starting to pop up. OfficeMax is running a Volkswagen Beetle giveaway sweepstakes on its site to lure different demographic segments — namely parents and high schoolers.

Fun merchandising gimmicks, Web events and promotions are especially appealing to the younger set, says Theo Gering, an independent business developer in Amsterdam.

"Merchants can even chat to

get mind share," Gering says. "Just hire a few dozen stooges to hang out at major chat sites under various identities and gush over [their] back-to-school products."

Ryan Vero, vice president of e-commerce at OfficeMax, says his company anticipates a 500% increase in Web-based, school-supply shopping this year. But it took work to attract that market share, because back-to-school shoppers — parents and kids — don't fit OfficeMax's traditional businessperson demographic, he says.

After studying the needs of parents and kids, OfficeMax's e-commerce team laid out its school-supply Web pages much like it would merchandise in a store. Parents, Vero says, need to find things quickly and need help making buying decisions. So, the site's back-to-school section was designed accordingly.

Secondary marketing channels such as online communities and portals like Yahoo Inc. in Santa Clara, Calif., are also drawing parents to online back-to-school campaigns.

Last week, OfficeMax, Delia's, J.C. Penney Co. and other retailers linked their school promotions to Schoolpop Inc.'s online mall ([www.schoolpop.com](http://www.schoolpop.com)), a virtual school fundraiser in Menlo Park, Calif. Schoolpop offers shoppers, mostly parents of school-age kids, the chance to divert rebates of up to 15% to the school of the shopper's choice.

But Mike Weller, vice president of e-commerce at Schoolpop, says the company might be missing an opportunity. He says that, aside from promotional material its retailers might submit, Schoolpop isn't putting extra effort into the August and September back-to-school rush. The reason: Schoolpop spends its entire summer ramping up for a much more lucrative season — Christmas — which really gets under way at the end of September, Weller says.

"Back-to-school is really a short-lived market," he says. "We've seen statistics that show flat buying from [March through October]."

Gering begs to differ. "Brands on kids' lips can be a big Web winner," he says. ▀

Radcliff is a freelance writer in Northern California.

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KeyCorp IT Exec  
Joins New Firm

Allen J. Gula Jr., former chief technology officer at KeyCorp in Cleveland, has joined Franklin Resources Inc. in San Mateo, Calif., as senior vice president and CIO. Gula, 44, will direct global information services and technology for the investment management firm.

Export Forms  
To Go Online

The U.S. Census Bureau will soon allow exporters to file

export declarations online at a Web site it's developing with the U.S. Customs Service. The information is used to calculate the nation's balance of trade. The system should be ready by Oct. 1. More information is available at [www.customs.ustreas.gov/impoexpo/auto\\_exp.htm](http://www.customs.ustreas.gov/impoexpo/auto_exp.htm).

Social Security IT  
Executive Leaves

Kathleen Adams is leaving her post as assistant deputy commissioner for systems at the Social Security Administration to join SRI International Inc. in Fairfax, Va. Adams will be a vice president of strategic accounts at SRI, a consulting and systems integration firm. She is chair of the federal government's Chief Information Officers' Council Year 2000 Committee.

Excite@Home  
Makes Investment

Excite@Home last week said it made an initial investment of \$15 million in Tickets.com and would invest an additional \$40 million pending regulatory approval. The companies will share content, for which Tickets.com will pay Excite@Home \$25 million. Excite@Home will incorporate Tickets.com's content into its portal and broadband services for consumers.

## Fewer Stocking Up for Y2K

How purchasing managers say they're preparing for year 2000:

34.6%	Plan to expand inventories because of year 2000 concerns, with Oct. 1 and Nov. 1 the most popular start dates.
Of those...	
82%	Plan to add up to 30 days' worth of goods to current inventory levels.
14.8%	Plan to add 31 to 40 days of extra goods.
3.2%	Plan to add more than 40 days of goods to inventory.

Base: Survey of 350 purchasing managers

## It's time for 'ERP lite'

JIM CHAMPY

ONCE AGAIN, we face an opportunity for IT to simplify work and help companies focus people's efforts where they really count. We'll soon see whether the ERP industry has the sense to pursue this opportunity and whether managers have the appetite to eliminate the complexity in their businesses and some of the useless tasks they perform.

The last round of enterprise resource planning (ERP) systems offered hope for improving work efficiencies. In theory, companies would adapt to the more streamlined processes inherent in those large systems. And many companies did. But the extraordinary customization choices that ERP systems offered gave many more managers a way to avoid making hard decisions about eliminating useless work. More customization than standardization went on.

Now, many of the large ERP software providers are teaming up with IT services and communications companies to offer their systems on a dial-in remote basis and on "rental" terms. It's sort of a throwback to the service bureau business of 20 years ago.

But many of those service providers are just moving their applications from one technology platform to another and offering different financial terms. They're ignoring the real challenge once again: getting companies to radically alter their processes. Real efficiency improvements will happen only when that occurs. IT alone, without process change, doesn't add much value.

The past 10 years have been a struggle to get companies to change how they do work. The pressures of e-commerce and digital markets are creating an even bigger need for business and process change. But here's what it will take from service providers and their client companies to really affect how business gets done: ERP service providers have to create systems that reflect the minimal work a company needs to do as it moves through a process. Applications, processing and telecommunications services must be packaged and offered at a very low price to help get the laws of economics to kick in. Think of it as a form of "ERP lite" — and build it for big companies.

Creating "lite" systems may seem counterintuitive. Historically, software companies have

operated under the assumption that the more options they offered, the better their product would be. Please reverse that thinking. The world needs only one (simple) payroll system.

On the client side, many managers are proud that they can deal with the complexity of their business and want to preserve it. They wear complexity as a badge of courage. They also believe a lot of their work processes are unique. I once had a client who reveled in being able to maintain 75,000 different SKUs, when all its customers needed was a third of that number.

Managers must also take a hard look at how their work adds value to their core business. Companies still do a lot of useless work. I con-

tinued to be struck by the number of companies that set up agonizing approval processes for purchasing a \$2,000 PC, while paying little attention to the million-dollar deals that their sales forces are making or the quality of the products they're delivering.

My suggestion: Divide work into two camps. Some processes contribute to a company's distinctiveness. I call them the identity processes — like risk management in finance or what an airline does for frequent travelers. These processes deserve custom systems and heavy investment. And it's on these processes that managers should put their focus and energies.

Much of the rest of what a company does is commodity work, which deserves a commodity system. This should be the focus of ERP lite.

Once again, IT is giving us a chance to make work life more efficient and less complex. Let's see whether this time we can replace our neurosis for completeness with a passion for simplicity. ▀

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. He can be reached at [JimChampy@ps.net](mailto:JimChampy@ps.net). His newspaper columns are syndicated by Tribune Media Services.

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# CALMING THE CUSTOMER

**Y2K-worried customers will flood your company with all sorts of questions and demands. Are your customer service and help desk staffs ready to answer them?**  
**By Kathleen Melymuka**



MARC BERLOW

COMERICA'S BECKY SIEWERT: "Employees have to know the key messages and deliver them with confidence"

**E**ARLY LAST YEAR, a woman was opening a certificate of deposit account at a branch office of Comerica Bank when a comment from a bank employee stopped her cold. "I don't know that I would do that," the employee said, "because this CD goes past the year 2000, and this bank is in trouble. We may not make it."

As luck would have it, the woman opening the account was the wife of Comerica's CIO. That day marked the beginning of the bank's efforts to educate its first line of customer service representatives on year 2000.

The need to gear up customer service is especially acute in the financial services industry. A spring Gallup Poll found that 54% of Americans plan to obtain special confirmation of their bank accounts and other financial records in preparation for Y2K, indicating a likely surge in customer service calls in the last quarter. But service industries like utilities, airlines, telephony, delivery and electronics and appliance retailers may also be hit, especially after the new year, when many expect a wave of inquiries about real or perceived Y2K problems.

Bruce Calhoon, director of the Contact Center Practice at Answerthink Consulting Group in Atlanta, outlined the problem for call centers at a recent International Quality and Productivity Center conference on Y2K customer service. A 100-seat call center may answer 15,000 calls in 24 hours at a cost of about \$3 per call. That means a modest Y2K-induced increase in customer calls — say 20% from mid-November through mid-February — could generate \$800,000 in additional costs. Certainly an event worth planning for.

But many companies aren't doing that. Earlier this year, the Center for Workforce Effectiveness, a management consulting firm in Northbrook, Ill., found that only one-third of major companies surveyed had customer service people on their Y2K teams. "The very people who would have to deal with these issues were not involved in solutions," says John Bremen, a principal at the center.

The financial services industry is out front in preparing for Y2K customer service issues and can serve as a model to other industries that need to get in gear. It has approached the problem from two angles: front-line service representatives and call centers. For front-line service representatives, the question is how to turn them into an efficient force for reassuring nervous customers.

For call centers, the issue is how to handle or deflect the expected increase in Y2K-related calls and plan for Y2K problems that may affect the call center itself.

After the fiasco with the CIO's wife, Detroit-based Comerica Inc. realized it had to educate its staff. "Employees have to know the key messages and deliver them with confidence," says Becky Siewert, Y2K communications program manager.

Keep the key messages simple, she says. Like this: "The Y2K challenge is our top priority. The safest place for your money is

in the bank. Your funds are FDIC-insured up to \$100,000 per account. For more information, visit their Web site at [fdic.gov](http://fdic.gov)."

All of Comerica's 11,000 employees have received key Y2K information on an 8- by 5-in. card, and the bank augments that through newsletters and e-mail. "Any time we communicate with employees, we add something current and important about Y2K," Siewert says.

Comerica is stressing each employee's responsibility to get the Y2K message right, she adds. Each employee must take a 25-minute year 2000 computer-based training (CBT) course, pass a test and sign a statement saying he understands the bank's Y2K message and is accountable for what he says. Managers must report on the number of employees who have taken and passed the course and how many have attended Y2K training updates.

Finally, the bank uses some good-natured bribes to make sure employees get with the program. For example, Y2K e-mails often come with small rewards for those who open them or solve Y2K puzzles inside. Employees who are designated "Y2K champions" roam the buildings asking year 2000 questions and award \$10 bills to those who give the correct answers.

The program is working, Siewert says. "We've had a 98% success rate on the CBT test, and employees are no longer getting into these hour-long conversations with people. We've provided them with the confidence to say, 'We can speculate for days, but this is what you need to know.'"

### Call-Center Contingencies

At Progressive Insurance in Highland Heights, Ohio, call centers handle customer service, so information services executive Dennis Sutcliffe assembled a Y2K customer service team that includes decision-makers from every business process the call center supports.

Call center plans are intrinsically entwined with contingency plans, because many year 2000 problems will result in more calls, he says. So the team began by brainstorming about what could go wrong in each business process. Phone outages, power failures, postal delays, cash and credit processing problems could all affect service. System failures could result in breakdowns or — more dangerously — in inaccurate customer statements, erroneous shipments, inappropriate dunning notices or supply problems.

The team estimated how each scenario would impact call volume and telephone switch capacity and set up processes to deal with the most likely and biggest-impact scenarios. For example, the team determined that it was insufficient to have only two buildings with backup generators and planned to add a third. It also decided to move the company's 24-hour claims service unit to one of the backed-up buildings, starting with the New Year's Eve shift.

The group also looked at needs for additional call center staff, rollover phone routing and increased switch capacity. It devised space plans, seating plans and even desktop configurations for moving more people into backed-up buildings. They worked with the business units to determine minimum staffing levels to deal with short-lived meltdowns, sporadic disruptions and ongoing disruptions.

The completed plans were reviewed with each process area such as claims and product development, with the business process leader heading the discussion. "The idea is to get them to think about it," Sutcliffe says. "The press has been so optimistic lately [on Y2K] that we wanted to create a bit of an edge and get [the staff] more engaged." The final stage, Sutcliffe says, involves scheduled and unscheduled readiness drills.

### Deflecting Calls

At Belnexxia Inc. in Hull, Quebec, Maggi Williams is expecting an increase in year 2000 customer calls in December. She's director of business development at the Business Center, which provides help desk services for a half million customers of Internet service providers. "When Junior asks his parents if everything they've got will work [in year 2000], then they'll phone us," she says.

The tidal wave will hit in January. "If anything goes wrong with anybody's computer, they will phone on the first of January," she says. "It's a free call, so if there's no one else you can call, you'll call us. Even if things go great, people will call and say, 'Nothing happened. What do I do?'"

Because most callers will be asking questions that should be directed to hardware and software vendors, Williams plans to deflect as many questions as possible with a Web-based end-run. She has used a product called e-Service from Silknet Software Inc. in Manchester, N.H., to build a Web-enabled help desk to which about 400,000 of her customers have access.

Starting in September, a section of the Web page on Y2K will be highlighted, and users will be able to click on it for answers to frequently asked Y2K questions. An automated, voice-response phone system with the same type of information will catch customers who bypass the Web site. If all else fails, there are call center operators who will have the same information.

Having done what she can to provide access to potential Y2K-panicked customers, Williams is philosophical. "If the worst comes true, there will be no phone service," she says. "And we'll have no problems." ▀

## Is Your Call Center Ready?

Many companies assume their call centers can handle a Y2K surge with no special preparation. Bruce Calhoon, director of the Contact Center Practice at Answerthink Consulting Group in Atlanta, suggests that considering the following issues will help you decide whether you need to take action.

■ Who is likely to contact you and why?

■ How will calls be routed?

■ What information will call center operators need?

■ Can your people qualify calls and answer the simple ones, forwarding the rest to a few experts?

■ Can you estimate volume and duration of calls based on historical data?

■ Can you project calls by quarter, month, day of week and time?

■ How will events such as billing cycles and new product introductions affect call volume?

■ How are peak calling periods handled now?

■ Is there room for more people?

■ Does your system have the capacity to handle more calls?

■ What technology will be used?

■ Can you use out-sourcers and overtime?

■ Can you triage service, offering the best service to the most profitable customers?

— Kathleen Melymuka

ANNE MCCRORY/JARGON JUDGE

# So many acronyms, so little difference

**F**IRST, THERE WAS CRM. Now, there's ERM, PRM and even EBRM. Ugh. I know there are myriad reasons why such terms come to be. Technology and business need to evolve, and language must develop to define those concepts. But let's slow down and allow everybody to catch up.

That said, raise your hand: Do you know what CRM is? (Customer relationship management.) ERM? (I mean enterprise relationship management, not enterprise resource management.) PRM? (Partner relationship management.) EBRM? (Electronic-business relationship management.)

Now, if you've followed this column, you know I would never condone the use of these acronyms unless or until you happen to be in a room where everyone understands them. And the terms themselves more or less make sense, so I can't ding them in that regard alone. But the systems that are labeled one or the other often overlap where functions are concerned, and I'm not convinced there's enough consistency in their

naming to merit so many categories in such a specific space.

Consider customer relationship management. It arose from functions that were first found in sales force automation software, things like a database of a sales rep's conversations with a client that customer service folks, for example, could access when a client called with a question or complaint. But customer relationship management goes much further.

Picture a bank's customer service rep taking calls from clients. As the client's account balances come up on the screen, so do opportunities to sell him other services based on his profile, as determined by a data mining program. The rep can then try to sell the client services before the client realizes the need for them. CRM is proactive, not reactive.

Now consider the phone banks at a technical support

line, where technicians are able to see not only a full record of all the problems you've called about, but also a record of what the salespeople, customer service folks and anybody else has worked on with you. While you're on the line figuring out why your server won't reboot, you want to check on the status of other equipment you ordered. "No problem," the technician says. "I can see shipment is scheduled for next Tuesday."

That transaction, actually, is what some might call enterprise relationship management because the rep went across departments and across systems to answer your question. The query went not just across front-office functions but into the back end, too — in this case, the company's order and inventory database. Yet the transaction was all to serve the customer, so it was also CRM.

Yet another subset in this

sphere is on the partner and supplier side, but I'm not convinced partner relationship management deserves its own space, either. I recently received some information from

a vendor staking claim to this moniker because its system was Web-based (so are many others), its products had server-based pricing (again, not alone) and it served the supplier/partner channel. Similarly, electronic-business relationship management seeks to foster relationships among electronic businesses.

Now I'm not saying all this software has no place in the world. Clearly, packages from companies like Vantive, Clarify and Onyx have customers. And other vendors, like Baan and Oracle, offer extensions that accomplish many of the same things. But let's not make things more confusing than they have to be. To me, they should all be CRM. ▀



Does any high-tech jargon leave you steamed? Or smiling? Tell ANNE MCCRORY, *Computerworld's* former copy desk chief and now a news editor. Contact her at [anne.mccrory@computerworld.com](mailto:anne.mccrory@computerworld.com).

## For the Bookshelf

Two new titles about career advancement and leadership

BY ALAN R. EARLS

**Getting Promoted: Real Strategies for Advancing Your Career**  
By Harry E. Chambers  
Perseus Books, Reading, Mass., 1999; 243 pages; \$13, paperback

*Getting Promoted* should have been titled *Stop Making Excuses*. The book squarely addresses all the things you should do and probably already know you should do to make the most of your skills and capabilities. It is well organized, readable and easy to use. It even has a self-scoring system so you can access your progress.

*Getting Promoted* is one of the few books available that focuses solely on making the

most of your existing career opportunities (assuming you are currently employed).

Although not specifically information technology-focused, the author is clearly familiar with issues in fast-paced, technology-driven environments. Indeed, the real-world career example cited in the introduction is an IT professional. And if you find yourself feeling dead-ended or muttering any career-killing phrases like "It's not my job" or "They don't pay me enough," *Getting*

*Promoted* will help you make a fresh start.

If the book lacks anything in terms of its stated premise, it might be that it seems to miss some of the motivational

questions that make the difference. In other words, *Getting Promoted* talks about what one *should* do rather than discussing the *why*.

A smaller gripe: Some of the illustrations seem to be in draft form and don't effectively communicate the author's point.

**Right From the Start: Taking Charge in a New Leadership Role**  
By Dan Ciampa and Michael Watkins  
Harvard Business School Press, Boston, 1999; 272 pages; \$24.95, paperback

Nothing succeeds like success. In that spirit, *Right From the Start* offers practical advice and inspiration for new managers to help them get off on the right foot and make the

most of their new positions. As the authors note, taking on a new *leadership* position is different from any other new position in that one must begin to act and set directions even before having full understanding of the problems and perils you face. That's especially true in IT, where one must often begin to line up resources and assign tasks before requirements have been finalized.

In fact, new managers need to set the tone of their administration and begin to inspire confidence in others almost immediately in order to build loyalty so they can succeed later on. Ciampa and Watkins say most leadership jobs allow a window of only about six months to accomplish this "tone-setting" — and doubtless that period is even briefer in IT. Getting through that window without making major mistakes and without sacrificing your reputation or image takes preparation and im-

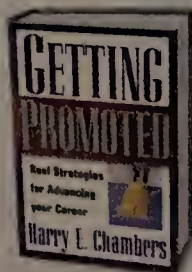
mense self-control.

This book is especially geared toward higher-level managers, but many of the lessons will apply to anyone

with management or project leadership responsibilities. For instance, the lessons on "knowing thyself" (so that you can act in a coherent and decisive way) and building credibility apply

equally well whether you're responsible for two other employees implementing a new application or an entire IT department. This fascinating analysis of the process of becoming a leader is a must-read. The reward is that one presumably will have mastered the art of getting others to do what you believe needs to be done — even when you don't have the formal power to compel them to do it. ▀

Earls is a freelance writer in Franklin, Mass. He may be reached at [alanearls@norfolk-county.com](mailto:alanearls@norfolk-county.com).



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**NOTEBOOK EXTREMES**  
 Hefty or thin, the choice is yours. Key battles in notebook market are happening at opposite ends of spectrum. Page B1


**THAT'S THE WAY IT WAS**  
 How technology helped newsmen Walter Cronkite predict a landslide in the 1952 presidential election. Page B6

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Y2K MAY STALL  
WINDOWS 2000

Analysts pessimistic; many expect mid-2000 shipment for Microsoft operating system

BY SHAMON BAUDIN  
A growing number of analysts are warning users not to expect delivery of Windows 2000 before the middle of next year. That's at least six months after the delivery date pinpointed last week by Ed Muth, Microsoft Corp.'s product manager for Windows NT. And the delivery date Muth targeted in his statement — which came on the heels of a confirmed one-month delay in the release of the third beta of the updated operating system — is later than what Microsoft had predicted. In a statement last year, it pegged mid-1999 for the final release of Windows 2000. Aside from any Microsoft issues, the major culprit behind analysts' prediction of a delay is the year 2000 problem and related system freezes that are expected to go into effect in the second and third quarters as many user companies. "Based on Microsoft's history and the events coming up this year, like Y2K, I don't see them coming out Windows 2000, page 16

**STUDY THE FACTS: Ripple Effect**  
Applications that could be affected by a Windows 2000 delay.

- Office 2000
- The BackOffice suite, including updates for:
  - SQL Server
  - Exchange Server
  - BackOffice Server

to help them find goods and compare suppliers' prices in specific vertical industries. Users say this emerging business-to-business purchase process will make transactions faster, simpler and potentially more cost effective. Take electronics components, Robert Child, director of corporate purchasing at EFTC Corp., an 1,800-employee electronics maker in Denver, said it might take two or three days and 10 or 20 calls just to locate Portals, page 16

**PORTALS LINK BUYERS, SELLERS**  
Web marketplaces cut costs, speed purchasing

BY CAROL BLUM AND SHAMON BAUDIN  
Got cows? Business users can now buy everything, be it cows, chemicals, electronic parts or paper, through Web portals designed

HELP DESK OUTSOURCING  
Farming out the headaches of the help desk to a contractor is a fast-growing trend — and it seems like such a great idea. But as national correspondent Julia King reports, CIOs are learning that a bad outsourcing deal just creates an endless loop of finger-pointing and frustrated users who can't get their technical problems solved. The upshot: Some companies are dumping their outsourcer for poor performance, bringing the help desk back in-house or renegotiating the contract to get service-level agreements. As one analyst put it, "Broken help desk processes and problems aren't going to be magically fixed by outsourcing." See page 24.

**COMPAQ NEEDS ENTERPRISE VISION**  
Hurdles: User retention, product integration

BY JAIKUMAR VIJAYAN AND APRIL JACOBS  
It has talked the talk. But can it walk the walk? One year after stunning the industry with its bid to buy Digital Equipment Corp. — and seven months after the deal went through — Compaq

which purchased Digital primarily for its service capabilities — has yet to explain how it plans to do that while integrating its now broad family of technologies into a long-term enterprise strategy. Compaq, page 103

COMPAQ CEO Eckhard Pfeiffer could be in trouble, analysts say. If product revenues slow down, quarterly results are expected this week



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# COMPUTERWORLD

The Newspaper for IT Leaders

\*Publisher's own data as of 5/31/99.



MICHEALE TAYLOR, Arizona State University



JEFF AKSE, American University

# Faces from the

**Don't kid yourself that today's youth lack direction. They have ambition and attitude aplenty. Consider these recent grads from the class of 1999, who were scooped up by employers at lightning speed and have gotten off to an impressive start in IT** By Rochelle Garner

**NAME:** Micheale Taylor  
**SCHOOL:** Arizona State University, Tempe, Ariz.  
**DEGREE:** B.S., computer systems engineering

When Micheale Taylor decides to make a life change, she really makes a change. For proof, look no further than her new career as software engineer at Inter-tel Inc., a telecommunications switch company in Chandler, Ariz. It's about as far removed from her previous job of eight years — as business manager at The Original Cookie Co. — as someone could possibly get. But the rewards promise to be a lot sweeter at Inter-tel.

"My goal was to make as much coming out of school as when I left The Original Cookie Co.," says Taylor, 32. "It wasn't difficult at all."

What took Taylor from pushing cookies to writing low-level machine code? "I always knew I would go back to school, but I was playing out the retail career as far as I could," Taylor explains. "I chose engineering, because I thought it would be challeng-

ing, and because I was interested in computers. Plus, one of my goals was to have a lot of choices. I didn't realize that the type of engineering I picked would be so perfect for that."

Taylor picked computer systems engineering, with its heavy focus on math, physics, core engineering and object-oriented programming. It's a brew that's in high demand around the Phoenix area at employers such as Intel Corp., Motorola Corp. and Inter-tel — companies with sophisticated programming needs.

Taylor honed her software skills during her four years at Arizona State University — but not just in class. She also got valuable experience working part-time to pay for her full-time studies. She worked at the Arizona Department of Transportation, where she developed a system to spot bottlenecks on the state's freeways; at Mesa Community College in Mesa, Ariz., where she was a C++ programmer; at a CompUSA store, where she taught Microsoft Excel and Access; and at her eventual, full-time employer, Inter-tel.

"I had about six companies pursue me," Taylor says. "My age is a big foot in the door with people. That, combined with my management and teaching experience, gives me credibility."

Laura Schultz, Taylor's manager at Inter-tel, says she's glad for her presence. "I feel

very fortunate that I have her reporting to me," says Schultz, who is Inter-tel's manager of computer/telephone integration technology. "I know she'll take and run with any task she's given — making sure she fully understands it, doing all the research she needs to do and finding the people she needs to talk to rather than relying on me to do it for her," Schultz says. "She's taken on more responsibility lately. She's actually running a project."

**NAME:** Babatunde Akinsanya  
**SCHOOL:** George Mason University, Fairfax, Va.  
**DEGREE:** B.S., computer science

Babatunde Akinsanya didn't see himself interested in computer science. Heck, the only reason he took a class in C++ was to get his family off his back.

"My whole family told me to try this, maybe because I was always taking things apart but couldn't get them back together," says Akinsanya, who had been a finance major before moving from Lagos, Nigeria. "So I said, I'll take a class and see if I like it. And I fell in love. Now I come home excited all the time, and they say, 'We told you so.'"

Akinsanya doesn't mind. The recent grad has found a calling that keeps him motivated. So motivated, in fact, that he's been inducted into the Golden Key National Honors Society and received

George Mason's Academic Excellence Award and the All-American Collegiate Award.

"I love the idea of designing something that people will use to make their day go better," he says. "At school, I focused on writing applications that relate to what customers want."

That was in school. But an internship at BDM International in Fairfax (now TRW Systems & Information Technology Group) showed Akinsanya that there's more to software development than just coding. At the information technology government contractor, he found himself drawn to the real-world practicality of project management.

"I didn't like project management in school, because it was all theory. But when I did my internship, everything came into play. Now I can't decide whether to focus on management or programming," he says.

Fortunately, Akinsanya has time to decide. His new bosses at Sprint Corp. will give him leeway before he decides which track to pursue. He starts his new job in data operations development in about two weeks.

As Akinsanya works, he intends to pursue a master's degree. Why continue his schooling? For starters, it will help him stay ahead of the competition. Just as important, it will offer new avenues to explore.

"The IT field is constantly

BABATUNDE AKINSANYA, George Mason University

BEN YOUNG, West Virginia University

TOM LEGRO BOB BEVERLY

# Class of '99

changing, and there's so much out there I want to think about, like [artificial intelligence]. I want to be a part of it," he says.

**NAME:** Ben Young  
**SCHOOL:** West Virginia University, Morgantown, W.Va.  
**DEGREE:** M.S., computer science

Ben Young knew he wanted a career in computers. He just didn't know exactly what it should be. That's why, after graduating with a bachelor's degree in math and science from Alderson-Broaddus College in Philippi, W.Va., Young decided to go for a master's at West Virginia University. He hoped a larger school would expose him to more IT fields.

It worked — and not just because the university teaches more classes than a small, private school. It also has the Oracle Academic Initiative, thanks to alumnus Ray Lane, Oracle Corp.'s president and chief operating officer.

Young signed up for the series of classes on Oracle8. He was hooked. "That's what showed me how much I like [IT] and database design," Young says. "Most of my graduate classes were theoretical. But these grabbed me."

Young had no trouble finding a job — he was approached by 15 different companies. But the native West Virginian wanted to stay in his home state. Young's professor took extra care to introduce him to West Virginia companies,

including ManTech Advanced Systems International Inc. in Fairmont.

"Location had a lot to do with my decision, but it's a good environment for me," Young says. ManTech "has a good reputation for educating employees, it's friendly and has a noncompetitive atmosphere." Young is now staff database analyst at the contract software developer, working on a data warehousing project for the federal government.

"Ben is young, and he needs to gain experience, but he has the raw talent and the raw skills to do well in the IT community," says Young's boss, Jeff Edgell, assistant executive director. "For this company, in particular, he has the very important attributes of being a good team player, dynamic and able to change gears and focus as problems arise. That flexibility is key."

**NAME:** Jeff Akseizer  
**SCHOOL:** American University, Washington  
**DEGREE:** B.A., visual media, with a minor in computer information systems

Jeff Akseizer is a dynamo of activity and interests, making him impossible to categorize: He's an arts guy — working as director, cinematographer and editor of digital presentations at Fox, CNN, PBS and ESPN, while producing interactive CDs on cutting-edge art. No, he's a tech-head — working as

systems administrator for both Windows NT network servers and Apple Computer Inc. G3 Web servers in a variety of jobs.

In fact, the hyperkinetic, 23-year-old is both. He's also the manager of multimedia labs and digital labs at American University School of Communication (where he supervises a staff of 10 work-study students), the youngest adjunct professor ever appointed at the School of Communication and he's an adjunct professor at Gallaudet University in Washington, where he engineered, developed and is now building a multimedia facility at the renowned school for the deaf.

That's in his spare time. He also does contract work. "Lately, the National Institutes of Health wants someone who knows both multimedia and programming," Akseizer says.

"Jeff is one of those amazing people," says Denise Brinker, director of academic computing at the School of Communication and Akseizer's boss. "I saw him originally as a student always doing multimedia projects, and I'd always assumed that his niche was video. But when I interviewed him for this job, I saw he had this computer background, and that's exactly what I was looking for."

And how is Akseizer as an employee? "He's fun, and he shows a remarkable maturity for someone his age — especially in his role as supervisor.

He's totally bonded with the work-study staff, and on the other hand, he's definitely their boss."

How did Akseizer get interested in so many different areas? "I started when I was 8," he says. "My dad's a dentist who lectures all over the country about computers and dentistry, so we constantly had new technologies arriving in the house. I had an early understanding of how digitizing works. I've always loved computers."

If that's the case, why the degree in visual media? "I started off as a biology major, wanting to be just like dad, but I put the brakes on that after a class in cellular biology," Akseizer says. "I said, this is way too boring. I thought about computer science, but the CS program here is weird, with a lot of database management. So I went to the School of Communication, which let me create my own degree."

Now Akseizer just has to figure out what he wants to do with his life. He could teach, obviously. But he's also lured by the song of digital special effects. "I really get into the technical stuff, and I'm into multimedia. I don't know what hat to wear. I'm also thinking about starting my own multimedia institute for inner-city kids. I'm trying to decide." ▀

Garner is a freelance writer in San Carlos, Calif.

I didn't like project management in school, because it was all theory. But when I did my internship, everything came into play.

BABATUNDE AKINSANYA,  
DATA OPERATIONS DEVELOPMENT,  
SPRINT CORP.

# Vendor-Managed Inventory

BY JACQUELINE EMIGH

**T**HROUGHOUT the supply chain, vendor-managed inventory (VMI) is a way to cut costs and keep inventory levels low. Its practitioners range from food manufacturers like Kraft Inc. in New York and Mott's USA in Stamford, Conn., to chain-store wizard Wal-Mart Stores Inc. in Bentonville, Ark.

VMI lets companies reduce overhead by shifting responsibility for managing and replenishing inventory to vendors.

"If you're smart enough to transfer the ownership of inventory to your vendors, your raw materials and work-in-process inventory comes off your balance sheets. Your assets go down, and you need less working capital to run your business," says Ron Barris, global leader of supply-chain management for the high-tech industry at Ernst & Young LLP.

In VMI, the vendor tracks the numbers of products shipped to distributors and retail outlets. Tracking tells the vendor whether or not the distributor needs more supplies. Products are automatically replenished when supplies run low, and goods aren't sent unless they're needed, consequently lowering inventory at the distribution center or retail store. Suppliers and buyers use written contracts to determine payment terms, frequency of replenishment and other terms of the agreement.

VMI is enabled by information technology, which often allows for a direct project payoff. The most prevalent technology in VMI is electronic data interchange (EDI), an ordering system traditionally conducted over private value-added networks. Typically, the manufacturer takes a daily review of inventory by pulling down EDI files from the distributor. The manufacturer then uses the inventory data to put together an anticipated order for the distributor. After getting an electronic acknowledgment, the manufacturer ships the order. When the

## DEFINITION:

VMI is a streamlined approach to inventory and order-fulfillment. With it, the supplier, not the retailer, is responsible for managing and replenishing inventory. An integral part of VMI is EDI — electronic transfer of data over a network.

## Hard Goods Distribution Processing

ORDER PROCESS WITH VMI		ORDER PROCESS WITHOUT VMI	
PROCESS	DAYS	PROCESS	DAYS
① Review current inventory levels, pulling files from distributor to vendor	1 to 2	① Review current inventory levels	1 to 2
② Vendor sends EDI document verifying data	1	② Check system data for accuracy	1
③ Vendor puts together anticipated order for distributor	1 to 2	③ Review all branch inventories	1 to 2
④ Vendor sends advanced shipping notice to vendor via EDI	1	④ Put together purchase order for vendor	1 to 2
⑤ Distributor verifies order; sends back-order acknowledgment via EDI	1	⑤ Mail order to vendor	4
⑥ Vendor picks order	2 to 3	⑥ Vendor receives order and verifies it with distributor	2 to 3
⑦ Vendor ships order	4	⑦ Vendor picks order after talking with distributor	2 to 3
⑧ Distributor receives product without check-in and verification	1	⑧ Vendor ships order	4
⑨ Via EDI, distributor acknowledges receipt of product	1	⑨ Distributor receives product and checks order	1 to 2
⑩ Vendor paid via electronic funds transfer from distributor's bank	1	⑩ Distributor calls vendor to discuss discrepancies	1 to 2
⑪ Distributor writes check and mails to vendor	4		
<b>TOTAL</b>	<b>14 to 17</b>	<b>TOTAL</b>	<b>22 to 29</b>

product has been received, payment is made with an electronic funds transfer from the distributor's bank.

Distributors of hard goods such as auto parts and electrical supplies began experiencing the benefits of EDI-based VMI several years ago, says Scott Stratman, president of The Distribution Team, a consulting company in Colorado Springs. Stratman estimates that by lowering inventory levels and eliminating paperwork such as purchase orders and payment by check, such distributors have cut the time for order fulfillment from a range of 22 to 29 days to one of 14 to 17 days (see chart).

Many VMI implementations

use customizable software from providers like Supply Chain Solutions in Enfield, Conn., E3 Corp. in Marietta, Ga., and Manugistics Inc. in Rockville, Md. VMI is also being integrated into larger supply-chain implementations that combine the inventory management, order fulfillment and product replenishment of VMI with collaborative sales planning and forecasting.

For the most part, manufacturers haven't integrated VMI with their internal enterprise resource planning (ERP) systems. That's mainly because software vendors haven't built interfaces between the two types of systems.

"The two systems use differ-

ent data models," says Ron Girard, an analyst at Boston-based Advanced Manufacturing Research. Generally, ERP components haven't scaled to the item location volume demanded in a manufacturer-to-retailer environment. So unless you're willing to take on the burden of systems integration, you are faced with a sneaker net, Girard says. Item location volumes are computed by multiplying the number of units of an item by the numbers of locations where it's sold.

Though automated today, VMI was once strictly manual. For several decades, route salesmen for food manufactur-

ers have taken inventory when they visit stores to stock the grocery shelves, says Tim Van Mieghem, president of The Proaction Group, a consultancy in Chicago.

Makers of hospital supplies became similarly inspired, employing in-hospital attendants to count and replenish items.

Department stores like Wal-Mart moved to automated VMI in the late 1980s. One of the driving factors was the difficult task of predicting how much seasonal apparel was needed, says Bob Copeland, senior manager at Atlanta-based Kurt Salmon Associates, a consulting firm in the retail arena.

The apparel industry has continued to be a pioneer in VMI ever since. For example, Greensboro, N.C.-based VF Corp., maker of brands like Lee and Jantzen, has been implementing a sophisticated system that integrates retail inventory data from VMI into floor-space management at the store level. In a beta test, Shop-Ko Stores Inc. in Green Bay, Wis., reportedly experienced a gain of more than 20% in sales of men's jeans.

Ironically, though, industries facing complex situations have been among the last to adopt automated VMI. Supermarkets have typically taken longer than department stores, for example. The sheer numbers of items in consumers' grocery store carts have meant greater complexity in tracking and using sales data.

VMI automation at its peak can be seen in industries like car and paper manufacturing, which need to comply with environmental guidelines for water treatment. Manufacturers in those industries are using VMI systems to track the need to replenish water and chemicals. They do this by embedding sensors in the water treatment tanks and using satellites to monitor the tanks. ■

*Emigh is a freelance writer in Boston.*

## MOREONLINE

For more information on vendor-managed inventory, visit our Web site.  
[www.computerworld.com/more](http://www.computerworld.com/more)

# Dear Career Adviser:

*How can I make my varied work experience work for me? I have five years of IT experience. I graduated from college with a bachelor's degree in psychology, and I have a technical school diploma in mainframe computer programming. I have experience as a PC instructor, in help*

*desk support and as a project manager/business analyst, mainly working for Fortune 500 companies.*

*Currently, I'm a business analyst in our project management department, where I interface with clients and vendors while managing strategic corporate projects for our customer service division. With a combination of teaching, technical and business experience, what positions are best for me? Eventually I'd like to become a CIO, but with my background, what kind of training would I need? — CINCINNATI CIO*

## Dear Career Adviser:

*I've been in the IT area for 20 years. My work experience is very deep — from mainframes to very high knowledge of client/server systems. I'm currently a senior project manager with a lot of managerial responsibilities.*

*I have a bachelor of science degree in computer science*

*and my PMP (Project Management Professionals) accreditation. I would like to move to the next level of IT, such as a director, vice president or CIO. How should I market myself? What types of agencies should I use? — 20 YEARS AND GROWING*

## Dear Cincinnati and Growing:

Anne Rice Banno, president of Faircastle Technology, a Connecticut-based high-tech CIO search firm, says there may be valid reasons for remaining a project manager for 20 years, such as an interest in hands-on technical work, smaller projects or seeing projects through to completion one at a time. "But this is really not what CIOs are made of," she adds. Realistically, you should achieve that CIO title within the first 10 to 15 years of your work life. Or you should have made forays into the business side by running profit-and-loss

and business operations and maybe even getting an MBA.

Still, "Growing's career can advance," Banno says, "if he becomes responsible for multiple high-priority projects and shows strong management skills working with groups of 12 to 20 people.

"Alternatively, with just five years' work experience, Cincinnati, has more time to achieve CIO status and reach compensation levels ranging from a low of \$200,000 to a high of between \$500,000 and \$700,000 or more.

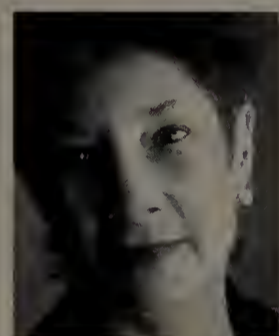
"Set a path to project manager," Banno says, "and gather experience in areas such as business applications development, database management, IT architectures, networks/infra-

structure, operations and ultimately international responsibility."

Management skills and an eye toward the bottom line and customer satisfaction will help you get there. Also, check out CIO magazine ([www.cio.com](http://www.cio.com)) and Stamford, Conn.-based Gartner Group Inc.'s home page ([www.gartnergroup.com](http://www.gartnergroup.com)) and read the article about the path from CIO to CEO in *Computerworld's* July 5 issue.

## Dear Career Adviser:

*I work as a senior IT asset management analyst for a large utility corporation. During the past two years, I've cut the cost of our IT equipment budget significantly.*



FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at [www.computerworld.com/career\\_adviser](mailto:www.computerworld.com/career_adviser).

*I'm very interested in seeking out other companies and showing them how to do this. Is this career path viable over the longer term. If so, how do I find companies jumping on the asset management and leasing bandwagon? — IT COST CONTROLLER*

## Dear Controller:

According to Chauncey Bell, senior vice president at Business Design Associates in Alameda, Calif., PC equip-

ment loses approximately 1% of its value every week. As companies are increasingly outsourcing, insourcing, leasing and subcontracting infrastructure equipment costs, you're right to think about the business side of IT. But this career is more entrepreneurial, and your success will be measured by your ability to produce results.

Having an IT background, knowledge of asset management software packages and modules in enterprise resource planning applications plus an MBA will help you understand the value of IT assets, their capitalization and their appeal as investments. Bottom line: If you're entrepreneurial with a record of successful cost-cutting and good contacts, you can approach companies and tie your compensation to your capacity to produce results.

Also, check out *Customer Support Management* magazine's article on asset support management ([www.supportmanagement.com/back/sep-oct/asset.html](http://www.supportmanagement.com/back/sep-oct/asset.html)), [www.looksmart.com](http://www.looksmart.com), Mountain View, Calif.-based Remedy Corp.'s enterprise applications and IT Service Management modules ([www.remedy.com/products/asset30.html](http://www.remedy.com/products/asset30.html)) and Gartner Group's Software Asset Management Interest Group (<http://gartner4.gartnerweb.com/gg/static/swami/swamifront.html>).

## WORKSTYLES

### What It's Like to Work in IT at NASA

Interviewee: Sandra Daniels-Gibson, director of the information technology and communications division.

Organization: National Aeronautics and Space Administration (NASA), [www.nasa.gov](http://www.nasa.gov)

Main location: Washington

Number of employees (end users): 1,200, all in Washington

Number of IT employees: Just over 20 permanent staff members (civil servants) and 300 contractors.

What is NASA's headquarters IT team responsible for? "We support financial and personnel systems, budgeting, the liaisons to Congress and the White House, the chief en-

gineer, the chief scientist.

"We also support all external communications, like the NASA home page and our kids-only Web site. We also help out at the White House if they are having a [NASA-related] function, like an event for the nation's teachers. We created a CD-ROM for the recent Apollo 11 anniversary."

Dress code: "It ranges from business to business casual, and we have dress-down Fridays."

Workday: "As early as 6 a.m. to 6 p.m. and later. [Or] you can work a nine-hour day and have one day off every other week."

Must people carry beepers? Cell

phones? Beepers that can receive brief text messages of what the problem is, for example: "Server is down."

In-house cafeteria/food service?

"Yes, a New York-style buffet with salads and vegetables and fresh fruit and sushi and a huge roast turkey every day, and stir-fried dishes and all kinds of healthy food every day. There's also a separate deli with sandwiches."

Rating (scale of 1 to 10, with 1



poor): 10, "because of the freshness, presentation and variety."

The one thing everyone complains about: "Anything that impedes the completion of work within schedule."

Where the office gossips: "The front office. There's also a whiteboard there, where people write quotes of the day."

Little perks: "When you've done a good job on a project, you can go to a launch at the Kennedy Space Center at Cape Canaveral — the key players in our [Y2K project] are going to a launch. We also get free tickets to events at the Air and Space Museum. Also covered parking, [public transportation] fare subsidies and the alternate work schedules. We have parties a couple of times a year. And at any given time, one of the astronauts is likely to be here giving a presentation in the auditorium, and that's really nice."

Last companywide/department perk: "A luau [this month], with all the attire, food, beverages, skits and decorations of a luau. Before that, we had a real down-home barbecue, and before that, a Halloween party with full costumes."

Would employees feel comfortable e-mailing the NASA administrator, Daniel Goldin? "People do. He invites people to communicate and makes himself visible."

Quote: "We're quite busy here, because we have the customer focus of making sure our users' desktop requirements are taken care of, as well as any number of special projects, like becoming ISO 9000-certified. And because we're NASA, a lot of what we do and support involves leading-edge technologies. So we get to support a lot of things that we wouldn't in other jobs. The variety of work keeps it interesting for us."

— Linda D.

Q



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what may be the best price/performance numbers in the industry—not just a lower cost of ownership, but a better return on investment. Which means they’re far less taxing on *your* resources. (What else would you expect from the world’s best-selling brand?\*) Find out more at [www.compaq.com/deskpro](http://www.compaq.com/deskpro), contact your reseller or phone 1-800-AT-COMPAQ.



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\*U.S. estimated selling price for the Towerable Desktop C400 400C (part number 4016J8-002). Actual reseller pricing may vary. \*\*For hard drives: GB=billion bytes. As reported by IDC (1Q99) for Compaq Deskpro. Operating system installed. Intel, the Intel Inside logo and Pentium are trademarks, and Celeron is a trademark of Intel Corporation in the U.S. and other countries. Compaq, the Compaq logo and Deskpro are registered trademarks and Better answers is a service mark of Compaq Computer Corporation. © 1999 Compaq Computer Corp. All rights reserved.

# TECHNOLOGY

## RAYOVAC RECHARGES

When the battery maker decided on SAP's R/3, it pulled out all the stops and went for a 14-month, \$14.6 million "big bang" implementation. The system's up, and the CIO calls the program a success — but managers unhappy with R/3's reporting may disagree. **► 56**

## IT DON'T COME EASY

User companies and vendors are working on a standard way to assess how easy software is to use. The goal: force vendors to make software more usable. IT shops with usability labs have been known to nix software deals when they learned the packages were kludgy. **► 64**

## ATTACKER TRACKERS

Using an intrusion detection tool from Network ICE, one business recently got aggressive with a cracker, tracing his IP address and forcing his Internet provider to shut him down. A growing list of security products are adding this IP tracking ability. **► 59**

## IBM LAUNCHES ROCKET CHIP

IBM gave users their first glimpse of the Power4, the processor it's developing for the AS/400 and RS/6000. The company said the chip has been cranked up to 1 GHz in lab tests. **► 58**

## HACK OF THE MONTH

Corporate networks could be sharing their messages with snoops or losing them altogether, thanks to vendors' sloppy default configurations. IT managers have wisely been disabling a vulnerable network-discovery protocol called IRDP — not suspecting that Windows and Solaris re-enable IRDP automatically. **► 59**

## EMERGING COMPANIES

The immersive graphics and easy interactions of virtual reality inspire near-fanatical loyalty in users. Avaterra.com believes virtual business-to-business worlds can do the same. **► 60**

## WHAT TONE QUALITY?

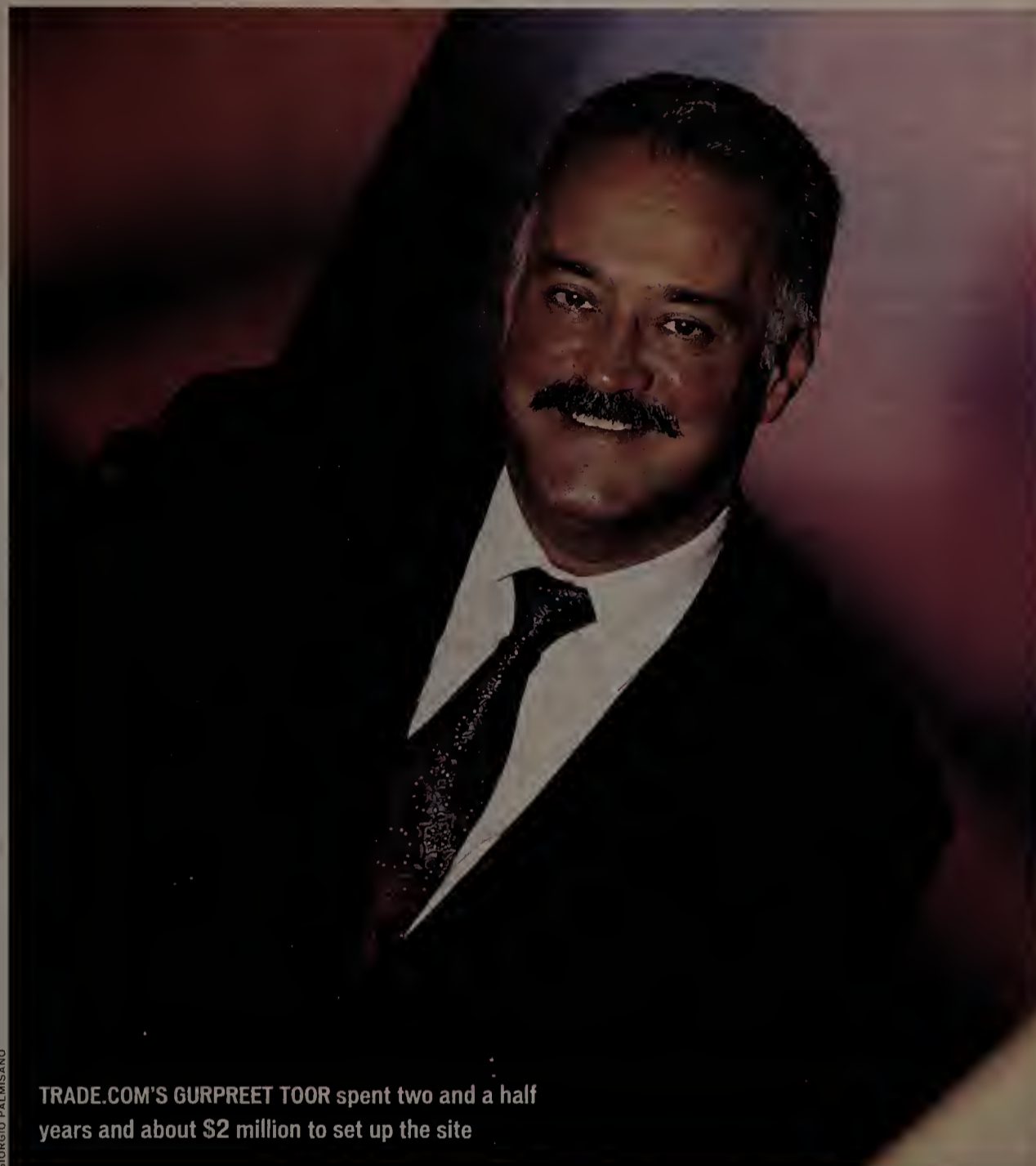
When it comes to putting audio-enriched presentations on the Web, sound quality isn't as important as just getting the darn sound files into the presentation properly. And that part of the task still needs work. **► 66**

## FLASHBACK

In 1982, TCP/IP changed the landscape and Sun started offering high-volume, low-priced, networked workstations with an open architecture. **► 68**

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TRADE.COM'S GURPREET TOOR spent two and a half years and about \$2 million to set up the site

## THIN SERVERS, THIN ICE?

**AS IT LAUNCHES** Trade.com, a global "virtual investment bank," Bluestone Capital is passing on proven Unix servers and instead deploying Windows NT on "thin servers" from a little-known company called Network Engines Inc. The big draw? Trade.com wants to take advantage of Microsoft Active Server Pages. The company is hedging its bets with Unix backup, and analysts are skeptical — but very, very curious.

# 58

## BRIEFS

## NEON Upgrade

Englewood, Colo.-based New Era of Networks Inc. (NEON) has upgraded its enterprise application integration adapter for SAP AG's R/3. New capabilities include additional interfaces and a new graphical user interface.

NEON adapter for R/3 costs \$95,000 per server.  
www.neonsoft.com

## Terminal Emulation Packages Released

Zirndorf, Germany-based HOB GmbH & Co. has released emulation software packages.

HOBLink Terminal Edition 99 (priced at \$500 per workstation) is a PC-to-host package that offers terminal emulation for mainframes and Unix systems. HOBLink Host Edition 99 (\$780) offers PC connectivity to IBM mainframe and Unix systems. HOBLink AS/400 Edition 99 (\$560) targets AS/400 midrange connectivity.

For more information, e-mail hob@mbapr.com.

## ObjectDomain 2.5

Object Domain Systems Inc. has announced ObjectDomain 2.5, a new version of the Raleigh, N.C., company's universal modeling language tool. Implemented in pure Java, ObjectDomain features multiuser support and HTML report generation intended to enable collaborative work.

ObjectDomain 2.5 professional edition costs \$995.  
www.objectdomain.com

# Rayovac Charges Into SAP With a Big Bang

*Company calls implementation a success, but says it now faces new challenges, like getting employees adjusted to the system*

BY STACY COLLETT

**W**HEN Rayovac Corp., the third-largest battery manufacturer in the U.S., set a goal in 1996 to double its size by 2001, it found that getting timely, accurate information out of its older system would be the No. 1 problem.

Manufacturing, distribution and sales groups each developed their own software systems, which didn't communicate well with one another, recalled John P. Ridlehoover, CIO at the Madison, Wis.-based company. Also, Rayovac's 10-year-old mainframe system, saddled with proprietary applications that didn't communicate with one another, was plagued with system failures and wasn't year 2000-compliant.

So Rayovac embarked on a 14-month, \$14.6 million SAP R/3 implementation using the Accelerated SAP (ASAP) implementation method. After months of debugging and simulations, Ridlehoover flipped the switch May 3, and the in-

stallation was deemed a success. But now Rayovac has new challenges: living without its reporting capabilities and adjusting to the new system.

First, Rayovac replaced its mainframe with a client/server infrastructure that would accommodate R/3. Once the basic SAP configuration was complete last October, Ridlehoover and his staff spent seven months on integration and simulation testing.

"We found a lot of bugs, where things had to be reconfigured," Ridlehoover said. "Orders we put into the system would not be shipped in the end." There were also errors in the master data that had to be fixed to maintain accurate inventories and produce proper results. Integration testing revealed more problems, and dozens of software patches had to be applied.

Now that R/3 is up and running, getting employees to adapt to the new process-ori-

ented system and the lack of legacy reports is a challenge.

"SAP is very weak in producing high-level management reports. Our management finds it very frustrating," Ridlehoover said.

"The issue isn't deficiencies or problems with R/3 [reporting], but with end users who are locked in to their old-school way," said Robert Dorin, an analyst at Aberdeen Group Inc. in Boston. Managers in manufacturing companies are used to having a stack of reports on their desk, whereas SAP can give them an



RAYOVAC CIO John P. Ridlehoover says code won't change

online query capability to provide information easily, he said.

Learning how to use the system is one of Rayovac's biggest challenges, and the company is training employees, Ridlehoover said. But he's committed to not modifying any SAP code. "I think that's the secret to the success of using vendor-provided software," he added. In a year or two, Rayovac plans to spend another \$1 million on

a data warehousing system with more reporting features.

Some observers say foregoing customization and forcing change is the price of doing business with ASAP, and the methodology has gotten better with time and experience.

"In the past, big-bang implementations have been widely unsuccessful because of the pain of the cutover and customization that's required. But the methodology that companies, SAP and consultants are using is much better developed now, and pitfalls are much better known," said Stephen Cole, an analyst at Forrester Research Inc. in Cambridge, Mass. ▀

## MOREONLINE

For articles, publications and other resources related to SAP, visit our Web site.  
www.computerworld.com/more

## Aussie Rail: ERP Innocent

BY PETER YOUNG  
SYDNEY, AUSTRALIA

In the U.S., people have blamed all manner of problems on Y2K [News, Aug. 9]. In Australia, enterprise resource planning (ERP) packages are the whipping boy.

Last week, the State Rail Authority of New South Wales admitted it couldn't blame \$3.6 million in overpayments on its ERP software, Mincom Information Management System (MIMS), but it seemed like the agency wished it could.

But human error was at fault, the authority acknowledged.

The excess payments occurred four times, of which two were related to "computer malfunctions," according to a press release. But the authority's chief financial officer, Rob Noyes, said he'd be hard-pressed to blame MIMS. ▀

Young writes for Computerworld Australia.

## Exchange Outsell Notes in First Half of '99

*But both companies say the lead may switch during second half of the year*

BY SAMI LAIS

Worldwide sales of Lotus Notes lagged behind Microsoft Exchange by 673,000 individual user licenses for the first half of this year, according to a recent report from International Data Corp. in Framingham, Mass.

Ken Bisconti, Lotus Development Corp.'s Notes marketing manager, said he was unconcerned. Microsoft sales tend to rise in the first half of

the year, and Lotus' rise in the second half, he said.

Doug Stumberger, an Exchange Server product manager at Microsoft Corp., agreed. "It wouldn't surprise me to see the lead switch in the second half," he said.

According to Microsoft, the report shows sales of licenses for Exchange climbed from 3.95 million in the first quarter to 4.14 million in the second.

The companies disagreed on

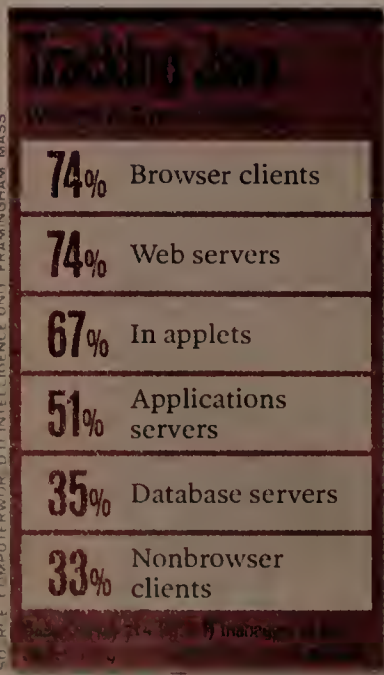
further interpretation. Bisconti said he expects Lotus will continue to "maintain our 8 million- to 10 million-seat edge in installed base."

Notes sales for the quarter were up 28% over the same quarter last year and growing "faster than the overall messaging marketplace," Bisconti said.

Novell Inc.'s GroupWise was a distant third, with 2.7 million sales worldwide. ▀

## MOREONLINE

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www.computerworld.com/more



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# Trade.com Bets Big On Thin-Server Strategy

Online trading company sidelines Unix in favor of Windows NT

BY STACY COLLETT

**I**NVESTMENT BANKING and brokerage firm Bluestone Capital LLP is about to take a giant leap into the world of online trading. On Aug. 30, the New York firm expects to launch Trade.com, a global "virtual investment bank" for online equity trading as well as currency, bonds and other securities.

Perhaps an even larger leap of faith is in the technology Bluestone has chosen to handle potentially high transaction volumes and keep the site from crashing.

Unlike ETrade.com and Charles Schwab & Co. online, which use powerful Unix servers from Sun Microsystems Inc., Trade.com is basing its site on Windows NT, which will be deployed on thin servers from a little-known company, Network Engines Inc. in Randolph, Mass.

The servers, called WebEngines, are application-specific devices that run on Pentium III processors from Intel Corp. Network Engines' product literature said each WebEngine can handle 190 million hits per day.

WebEngine servers work in a pool, or cluster, and act as one. If one server fails, the workload is redistributed to another. Trade.com will start

operations with 40 servers that cost about \$10,000 each and expects to have 100 servers in use by early next year.

Network Engines CEO Larry Genovesi said WebEngine servers can scale up to 256 nodes, but that such a configuration

system came down to it being the best way to link its expected 25 to 30 global banking partners, each with tens of thousands of accounts, to the site. "We have to interface with every major trading system, and we're trying to take advan-



TRADE.COM'S GURPREET "GARY" TOOR said only Windows NT can support Microsoft Active Server Pages

has never been tested. "It's impossible to generate that much traffic" in testing, he said.

For Bluestone, the decision to go with the NT operating

tage of Microsoft Active Server Pages," which are Web pages that can run embedded scripts on a server, said Trade.com's information systems director

Gurpreet Toor, who spent two and a half years and about \$2 million setting up the site. "Only NT today can support [them]."

Bluestone Chairman Kamal Mustafa said the firm will limit its Internet traffic, starting with 10,000 to 20,000 accounts from each overseas bank "and taking them on as we can, while maintaining our support."

Bluestone isn't taking a total leap into the unknown. The company said it will use Unix servers as backup, and if the WebEngines can't handle the load, Bluestone won't hesitate to switch over. How successful Network Engines' systems are in high-availability environments remains to be seen; the company has only one customer that it characterizes as a high-availability user.

Industry watchers were intrigued but cautious. "It sounds cutting-edge, but I'd be hesitant to stick my reputation and money on the line," said Ed Kountz, an analyst at Tower-Group in Needham, Mass.

Octavio Marenzi, an analyst at Meridien Research Inc. in Newton, Mass., said there are reasons other online brokerage firms have stuck with Unix. "It's more scalable and has the [clustering and parallel processing] you need," he said. ▀

## MOREONLINE

For resources related to online trading, visit our Web site.  
[www.computerworld.com/more](http://www.computerworld.com/more)

## BRIEFS

### Report: Handhelds To Soar in Europe

The market for smart handheld devices in Western Europe will begin to grow steadily and more than triple from its current size by 2003, according to report by International Data Corp. in Framingham, Mass. IDC predicted 7.2 million devices will be shipped in Western Europe in 2003. The lion's share will be smart phones - mobile phones that can transmit data and graphics as well as voice. IDC predicted that about 2.9 million smart phones will be shipped in 2003, compared with 347,000 units expected to ship by year's end.

### NEC Introduces PowerMate 2000

NEC Computer Systems Division, which is owned by Sacramento, Calif.-based Packard Bell NEC Inc., last week introduced the PowerMate 2000 PC, a "minidesktop" system. The PC consumes less power and emits less radiation than traditional PCs because it features an LCD display that uses thin-film transistors. It comes with two CardBus PC Card slots and two Universal Serial Bus connections, the Mountain View, Calif., vendor said.

A PowerMate 2000 with an Intel Celeron 433-MHz processor, 64M bytes of RAM and a 6.4G-byte hard drive is priced at less than \$2,499. [www.neccsd.com](http://www.neccsd.com)

## SNAPSHOT

### If You're Happy And You Know It

How satisfied are you with your handheld computer?



Base: Survey of 150 corporate users of handheld PCs

## IBM Introduces Chip for AS/400, RS/6000

Processor hits 1 GHz in lab tests, targets complex applications

BY JAMES NICCOLAI  
STANFORD, CALIF.

IBM last week offered the first glimpse of a new processor under development for its AS/400 and RS/6000 servers, called the Power4. A test ver-

sion of the chip has been cranked up to 1 GHz in IBM's labs, company officials said.

The disclosure was made at the closely watched Hot Chips conference, held here at Stanford University.

Because clock speed is only one determinant of server performance, IBM has also developed a complementary technology called synchronous wave pipeline interface, which will enable bus speeds for the

Power4 in excess of 500 MHz, said Frank Ferraiolo, a senior engineer at IBM. Bus speeds determine how fast a processor can exchange data with other parts of a system.

IBM hopes its Power4 will be used in powerful Web servers and for running e-commerce applications as well as complex technical and engineering applications used by the scientific community, said Joel Tendler, a senior technical

analyst in IBM's server group.

IBM aims to start selling the new processor in the second half of 2001 in its AS/400 and RS/6000 servers, he said.

IBM's 64-bit offering will compete with chips from Sun Microsystems Inc., Hewlett-Packard Co. and Compaq Computer Corp., all of which are refining their own 64-bit server processors. Intel Corp. is expected to enter the fray next year with its first 64-bit processor, known as Merced. ▀

Niccolai writes for the IDG News Service in San Francisco.

# Firm Nabs Cracker With Intrusion Detection Tool

*New generation of security software traces IP address, provides legal evidence*

BY ANN HARRISON

**I**N JANUARY, system administrators at Rockliffe Systems Inc. in Santa Clara, Calif., discovered their mail and Web servers were under attack.

Using Black ICE, an intrusion detection system from Network ICE Corp., the company tracked the attacker's IP address, blocked his attack and forced his provider to shut him down.

That's significant: Black ICE is an example of a growing breed of security tools that can track an attacker's IP address.

"It's a new concept to hunt down these hackers and take legal action," said Dan Arndt,

Rockliffe's vice president of operations.

Rockliffe, which produces MailSite (e-mail and list server software), first noticed its Microsoft Corp. IIS server, running Windows NT 4.0 with Service Pack 3, was locking up under a TCP synflood and port scan attack. Synflood attacks bombard servers with data packets; port scans look for vulnerable ports that can serve as entry points.

## Barrage During Beta

In April, the company became a beta site for San Mateo, Calif.-based Network ICE's Black ICE. Rockliffe also upgraded to Service Pack 4.

On June 22, the same invader launched a barrage of attacks: another TCP synflood and port scan; an HTTP get-data probe for open shares (which uses a known security hole to gain access to systems); and another exploit that looked for ways into the company's file system.

Rockliffe was ready.

Arndt said the Black ICE tool detected the attacker's IP address within four hours, while the Black ICE Defender tool blocked further traffic from that location.

Rockliffe then contacted Globall.net, the attacker's network provider. The attacker turned out to be in Brazil and called himself "Marco Jr." Rockliffe sent Globall.net a copy of its attack logs, and the provider immediately shut down Marco Jr.'s account.

That's important because In-

ternet providers are gun-shy about closing accounts unless the evidence is overwhelming. Arndt said Globall.net was impressed with the level of detail in the logs.

"This product is giving government agencies and investigators, or even users, the ability to pinpoint [attackers] and pursue them," Arndt said.

## It's Against the Law

Rockliffe is now exploring legal action. The information provided by Black ICE also allowed Arndt to remotely log into Marco Jr.'s Web server. He discovered the attacker was running an evaluation copy of MailSite whose free-use limit had expired. "He just wanted to hack into the system and ... not spend \$2,000 for the product," Arndt said.

Arndt suggested that other companies look for intrusion detection tools that reveal the attacker's IP address. "If you take an active role in tracking these people down, these hackers will realize that they are not anonymous anymore," Arndt said. "Hopefully, that will be a deterrent." ■

**This product is giving government agencies and investigators, or even users, the ability to pinpoint [attackers] and pursue them.**

**DAN ARNDT,  
VICE PRESIDENT OF OPERATIONS,  
ROCKLIFFE**

DEBORAH RADCLIFF/HACK OF THE MONTH

# Vendor Defaults Open Doors to Invasions

**C**ORPORATE NETWORKS and cable modem users could be sharing their messages with snoops or losing them altogether to denial-of-service attacks, thanks to a default configuration in Windows and Solaris machines, according to an advisory posted earlier this month by L0pht Heavy Industries.

Understanding the hack requires an understanding of some terms:

■ DHCP stands for Dynamic Host Configuration Protocol, which lets you dynamically assign IP addresses.

■ ICMP stands for Internet Control Message Protocol.

■ ICMP, in turn, is the "I" in IRDP — which stands for ICMP Router Discovery Protocol. IRDP is a simple, unprotected protocol used to discover addresses on

networks and subnets. It says, "Here I am," to which the router would respond, "Here's how you get to me," says John McCown, technical director of network security at the International Computer Security Association in Carlisle, Pa.

Because IRDP has long been subject to spoofing attacks, network administrators think that by disabling IRDP on their DHCP, they're protected.

They're wrong. Here's the problem: Microsoft's Windows 95, 98 and its upcoming Windows 2000, as well as some Sun Microsystems Solaris systems, re-enable this protocol even if you've turned it off.

According to a co-founder of L0pht, code-named Mudge, that vulnerability opens networks to a smorgasbord of attacks: snooping (switching traffic through a server, where unencrypted

data can be read), denial of service and man-in-the-middle (in which the attacker intercepts, or even changes, unencrypted messages). L0pht is a group of Boston-based, white-hat hackers who do security consulting.

Most IRDP spoofing threats are internal. Especially for man-in-the-middle and snooping attacks, the attacker must be inside the LAN or WAN.

But that's hardly comforting — most security threats do indeed come from the inside.

So what do you do if your organization is running DHCP on clients?

■ First, block all ICMP packet types 9 and 10.

■ Second, get a fix from Microsoft that disables router discovery at [http://support.](http://support.microsoft.com/support/kb/articles/q216/1/41.asp)

[microsoft.com/support/kb/articles/q216/1/41.asp](http://support.microsoft.com/support/kb/articles/q216/1/41.asp). "The change has to be made on every machine, so unless you have a log-in script or some automated way to do this, it's a lot of work," says



DEBORAH RADCLIFF is a freelance writer in Northern California. Her Internet address is [derad@aol.com](mailto:derad@aol.com).

Ian Poynter, president of Jerboa Inc., a consulting firm in Cambridge, Mass. (For more details, visit <http://l0pht.com/advisories/rdp.txt>.)

■ Finally, make sure to fix remote systems and laptops.

Poynter says it's regrettable that network managers

must hassle with yet another "misimplementation of the month," thanks to vendor carelessness. "It's bad enough the core protocols were often designed with no thought to authentication. But then we have to second-guess where they are misconfigured to," he says. ■

# Virtual World for Biz Kids

*Avaterra.com brings a dose of virtual reality to the business community*

BY CYNTHIA MORGAN

**T**HE dungeons-and-dragons world of virtual reality isn't exactly business as usual for corporate America. But Avaterra.com Inc. thinks it should be.

Avaterra.com, already doing well with its consumer-side virtual communities, is expanding its world of avatars, online shopping centers and live chat groups to the corporate sector.

Virtual communities may be old hat for online buffs — moviemaker George Lucas proposed one of the first online worlds, Habitat, in 1985 — but for corporate managers, the idea of a virtual business environment sounds about as far away as a *Star Wars* galaxy.

If you haven't entered a virtual community before, it can be a disorienting experience. You exist in the world as an avatar, a graphical representation that can be anything from a colored square to a 3-D human (or animal) figure. Your avatar can speak to the avatars of others, gesture, move through the world and

interact with objects in that world. The analogy to real-world living can go as far as eating, drinking, driving and sleeping online. How real it actually becomes depends in part on your willingness to suspend disbelief and on the environment's usefulness.

Avatars can be customized to look more like their human counterparts. They have personal spaces, such as an office or apartment, and can fill those spaces with tools they need. A fax machine, for example, might connect to background faxing; a videotape could contain multimedia training. If successful, an avatar's personal space could become a central depot for Web browsing, meetings, file storage and knowledge management.

Because so many tasks start there, the site can become very "sticky" — that is, it can have a remarkable ability to retain visitors. Good Web sites measure stickiness in minutes; a good virtual community measures stickiness in hours.

Right now, it's tough to imagine hardened corporate



**IN AVATERRA'S ONLINE WORLD, low-bandwidth virtual reality brings geographically dispersed employees together at corporate meetings**

executives sitting down to a virtual inventory or accounts receivable file while enjoying a virtual cola. But it's a trend that bears watching and one that's likely to turn up in marketing conversations that involve information technology.

The virtual communities promoted by Avaterra.com and others offer many ideas that IT managers can adapt to their intranets and extranets. The graphical online worlds can give new users visual clues to procedures, operations and data. File transfers of documents, multimedia files and software can be managed in the background; the user simply grabs the object and files move, install and launch transparently.

Meetings and brainstorming sessions can be conducted entirely online, without the setup problems and resource overhead of videoconferencing. And virtual librarians could collect

recorded customer support sessions and other knowledge that might otherwise be hard to collect from the most experienced employees, indexing it alongside more traditional documentation and tutorials.

Today, corporate interest in virtual worlds is focused on selling opportunities.

Avaterra.com offers e-commerce storefronts and new distribution methods for anything that can be encoded into a computer file. It's also trading the failing Web banner ad for a new type of online advertising: brand-name product placement. Hollywood has been successful at placing soda and clothing inside movies. Avaterra.com is doing the same online. A 3-D picture of a book might open to an ad, a Web page at *barnesandnoble.com* that sells the book or a discussion with the author.

Avaterra.com goes a step further by encouraging community members to send free "samples" of a product to others in the community.

Graphics and dynamic Web pages are an accepted part of an information package, and discussion and chat groups have accustomed users to online environments. Avaterra.com took over Fujitsu's Worlds Away service last year and, says CEO David Andrews, gathered 17 million subscribers in about three months.

Don't hold your breath for virtual corporate intranets anytime soon. Too much of this technology is still too cute for words, even virtual ones. But watch Avaterra.com and its cousins. Sooner or later we'll all be using this stuff. ▀



**AVATERRA.COM**  
CEO David Andrews in virtual mode

## Avaterra.com Inc.

**Location:** 3350 Scott Blvd., Zone 9  
Santa Clara, Calif. 95050

**Telephone:** (408) 845-9050

**Web:** [www.avaterra.com](http://www.avaterra.com)

**Niche:** Online virtual communities, including the business world

**Why it's worth watching:**

- Virtual environment concepts are infiltrating the business world.
- Users tend to view virtual worlds as personal portals and remain on those sites for long periods of time.
- Avaterra.com's ideas for building revenue streams from virtual world product placements could work for other companies.

• Avaterra.com's virtual communities could become an excellent model for online customer care.

**Company officer:** David Andrews, president and CEO

**Company goal:** Move virtual community technology into business transactions

**Milestones:**

- 1985: George Lucas, creator of *Star Wars*, conceived Habitat, a virtual world; Fujitsu licensed and developed the concept into entertainment centers known as Worlds Away.
- 1999: Avaterra.com founded; purchased Fujitsu Worlds Away.

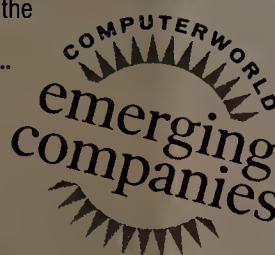
**Financials:** Publicly traded (NASDAQ)

Bulletin Board) under the symbol AVAR

**Products:** V-Zone: virtual communities on the Internet

**Red flags for IT:**

- Avatars and virtual worlds face an uphill battle to get out of the realm of fun and games and into the mainstream
- Although the company says its business communities are considerably more sober than its entertainment centers, even a button-down avatar could be too darn cute for corporate managers
- Bandwidth could be a barrier: The most effective virtual communities are heavy on graphics, multimedia and real-time action.



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## Electronic Watercoolers

Avaterra.com probably has the lock on 3-D virtual communities at this point, so if you're looking for a semi-immersive environment for business meetings or customer care, it's the one to contact.

More likely, however, you'd like some of the benefits of a strong community identity — extreme "stickiness," an ability to carry on real-time or near-real-time conversations with the geographically dispersed, customer loyalty and a high comfort level for uncertain users — without the sometimes terminally cute environment of a virtual world.

## Newsgroup and Chat

Sometimes the old-fashioned way is best. Internal newsgroups and chat sessions are still one of the best ways to open a dialogue among employees — and even important business partners. They're easily controlled because a discussion moderator can admit or deny participants or even censor messages if necessary, and they provide an all-important record that can be used to educate newcomers later on.

Most of us "newsgroup" already, without even realizing it, via e-mail. It's only a small step to constructing full-fledged discussion sessions, and a shorter step still to online chat. Major Web servers support some form of it, and freeware newsgroup software is readily available. Microsoft Exchange and Lotus Notes also offer extensive, archivable discussion capabilities.

## Free Chat

The much-ballyhooed war between Microsoft Corp.'s MSN Messenger Service and America Online Inc.'s Instant Messenger (AOL currently blocks messages from the Microsoft service) is taking place for a reason: AOL Instant Messenger has had one of the most phenomenal growth rates in Web history. Geographically dispersed workgroups can easily use it to deliver vital messages without entering the phone-line and e-mail onslaught.

## Webpage Chat

Most chat systems remain unconnected to the Web sites most users want to visit. Now an Israeli company, Hyperix Ltd., offers Goocy, freeware that adds real-time discussion capabilities to any Web site. It does require users to download a special plug-in before chatting, but it might be one a to lure visitors to your site's "electronic watercooler." See a demonstration at [www.getgoocy.com](http://www.getgoocy.com).

# Speech Gadgets Mainly for Heavy-Duty Transcribers



THE OLYMPUS DS-150 digital voice recorder comes with 8M bytes of RAM

BY HOWARD MILLMAN

**I**F YOU SPEND at least two hours per day dictating, get ready for some good news. The handheld recorders I tested, Dragon Systems Inc.'s NaturallyMobile and Olympus America Inc.'s DS-150, worked well enough for you to invest the 10 to 20 hours it will require to train them.

In my tests, both units achieved about 95% accuracy and can continue to improve as they learn your speech patterns and vocabulary. Despite this suitable-for-real-world-use degree of accuracy — a substantial improvement from when I looked at mobile speech-recognition devices just six months ago — they aren't quite ready for widespread use. The gadgets are probably best suit-

ed for doctors, lawyers, field salespeople and researchers.

Accuracy is a result of the time and effort you spend training the software and training yourself to use the devices. "After a couple of weeks of intense training [of] the software

and yourself, these mobile devices can achieve a 98% accuracy. But they are still speaker-dependent, so don't plan on throwing away your keyboard any time soon," says Rob Enderle, vice president of desktop and mobile devices at Giga Information Group Inc. in Santa Clara, Calif.

I would recommend you allow about one hour to learn the intricacies of the hardware, two hours to train the speech-recognition software and 10 more hours to train yourself to speak clearly, add syntax commands and avoid filler pauses.

I found minor differences between the units in accuracy and ease of use. I preferred the feel of the DS-150, even though its design — a little longer and narrower than a business card — made using it more complicated than the palm-size NaturallyMobile, with its 10 single-purpose buttons. Overall, I give slightly higher marks to NaturallyMobile for its easier-to-use hardware, software and instructions. I used a Compaq Corp. AP400 with 132M bytes RAM and an Intel Corp. PII-400 CPU for my test machine. Translation required about 60 seconds per page. ▀

Millman operates the Data System Service Group LLC, a consultancy in Croton, N.Y.

## NaturallyMobile

Dragon Systems Inc.  
www.dragonsys.com  
\$249

Dragon Systems' decade-long experience developing speech-recognition software shows clearly in this release. The software, Dragon System's NaturallySpeaking Preferred, installed quickly in a logical, easy-to-follow sequence. Transferring recordings from the recorder to the desktop via a custom cable and then translating them took a few seconds. To save time, you'll want to leave the special cable, which is bundled with the package, connected to an available communication port.

NaturallyMobile, like the Olympus DS-150, will share information with Microsoft Word, mostly through a cut-and-paste process or a file import. Both vendors offer software upgrades (\$50 to \$75) that provide enhanced integration with popular personal information and calendaring applications such as Microsoft Corp.'s Outlook; San Diego, Calif.-based Qualcomm Corp.'s Eudora; Symantec Corp.'s ACT; and Lotus Development Corp.'s Notes.

The early success I achieved with dictating in a variety of environments encouraged me to continue working with the unit. I had the highest accuracy in environments with either no noise or steady background noise, such as on a plane or in an automobile. Recording in areas with random noise, such as a diner, reduced accuracy to 50%.

NaturallyMobile's 4M bytes of memory held 40 minutes of high-quality recording, suitable for later transcription. You can record up to 74 minutes by setting the recorder for a lower sampling rate, but this lower-quality recording isn't suitable for automatic transcription. An

additional 8M-byte memory module (\$80) slips into a slot and can double recording times.

## Olympus DS-150 digital voice recorder

Olympus America Inc.  
www.olympus.com  
\$249

Travelers who prefer their technology compact will want the sleek, 2.5-oz. DS-150. However, the functions of the DS-150's buttons change depending on how long you hold them, and you often need to use them in conjunction with the menus generated by the thumb-wheel. Using this is more of a challenge than NaturallyMobile, with its plainly marked controls.

On the positive side, I liked the DS-150's convenient one-button dictation option. Pressing and holding the clearly marked button automatically overrides all other settings and puts the unit into its highest-quality recording mode needed for transcription. Melville, N.Y.-based Olympus bundles IBM's ViaVoice transcription software with the unit.

The unit's 8M bytes of RAM provide about 80 minutes of high-quality recording and 160 minutes of extended recording. Optional memory modules aren't available.

The DS-150 offers only two folders, holding 99 messages per folder (compared with NaturallyMobile's 99 folders with 99 messages each). That could be a limitation if more than two people share the unit or if you need a more flexible file management system.

Both the Dragon unit and the DS-150 use two readily available AAA batteries that power a unit for about nine hours. Each unit has an automatic shut-off feature.

NATURALLYMOBILE'S  
software can be  
installed quickly  
and easily



# Universal Serial Bus

BY MELANIE MENAGH

**U**NIVERSAL Serial Bus (USB) is similar to a serial port. It's a standard that supports a port on the back of your PC, where you plug in peripherals like your mouse and keyboard. But the USB standard is faster, easier and better, says Martin Reynolds, vice president and research fellow at Dataquest in San Jose.

USB, at 12M bit/sec., is about 10 times faster than a serial port and much smaller.

"The [USB] connectors are very small, so that means that while a parallel port is fine for a printer, it won't look so good on a camera the size of a golf ball," Reynolds says.

Prices are now virtually the same as a serial or parallel port.

One of USB's strengths is that it allows you to connect to a hub. These hubs have 4- to 6-ft. cables. One end hooks into the USB port on the computer, and at the other end is the hub — a box with six or eight USB plugs to which you attach peripherals. Some monitors or flatboards have hubs right on them.

By connecting to a hub, USB allows you to add (theoretically) more than 200 peripherals to your setup. It's sort of like an extension cord with lots of outlets; although Rob Enderle, an analyst at Giga Information Group Inc. in Santa Clara, Calif., says you probably only want to plug in five per hub, or speed and performance might be compromised. "It really depends on the bandwidth required of the peripheral," he says.

Something like a video camera or a scanner should have its own port. With something like a keyboard, mouse or joystick, you probably could plug in a hundred, you just couldn't operate them all at the same time, Enderle says.

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USB was designed to work with features in Windows 98 and the forthcoming Windows 2000 to recognize systems immediately; your monitor tells you what to do to get the driver you want to add. It does this without running wizards or re-

booting. If you're plugging in a camera, your monitor would show the message, "Please load driver disc for your 3Com video camera."

Reynolds says he has his printer, camera, scanner, fingerprint reader (for security

checks) and Zip drive all on USB. You can daisy-chain devices and it won't interrupt the system. "It's great for joysticks," Reynolds says. "Before, if you had more than one joystick, you'd have to unplug one and plug in the other. With a

hub, you can have them both plugged in, and people can play together."

There are downsides to USB because it runs only on Windows 98 or 2000.

"We don't recommend people trying to adapt their computers to USB by themselves," Reynolds says. "And by the time you get the plugs and software put in professionally, you could get a newer computer."

USB was launched by Intel Corp., but now other companies like Compaq Computer Corp. have come on board. The vast majority of vendors currently offer USB-equipped computers. On deck is USB2, slated for release late next year. It will be 20 times as fast, about 240M bit/sec., and will offer greater capabilities. "Right now, you can only get a video picture in the corner of your screen," Enderle says. With USB2 ports, you'll be able to have full-screen video viewing.

Such developments are in response to Apple Computer Inc.'s FireWire, which is lightning-fast technology at almost 400M bit/sec. FireWire is a high-speed dataport offered on most Apple and Sony Corp. equipment.

With the current USB, a peripheral that requires a lot of juice should be plugged in to its own port, not crowded on a hub. "A video camera [or] anything that pushes a lot of data should be plugged [in] separately because they need a lot of throughput," Enderle says.

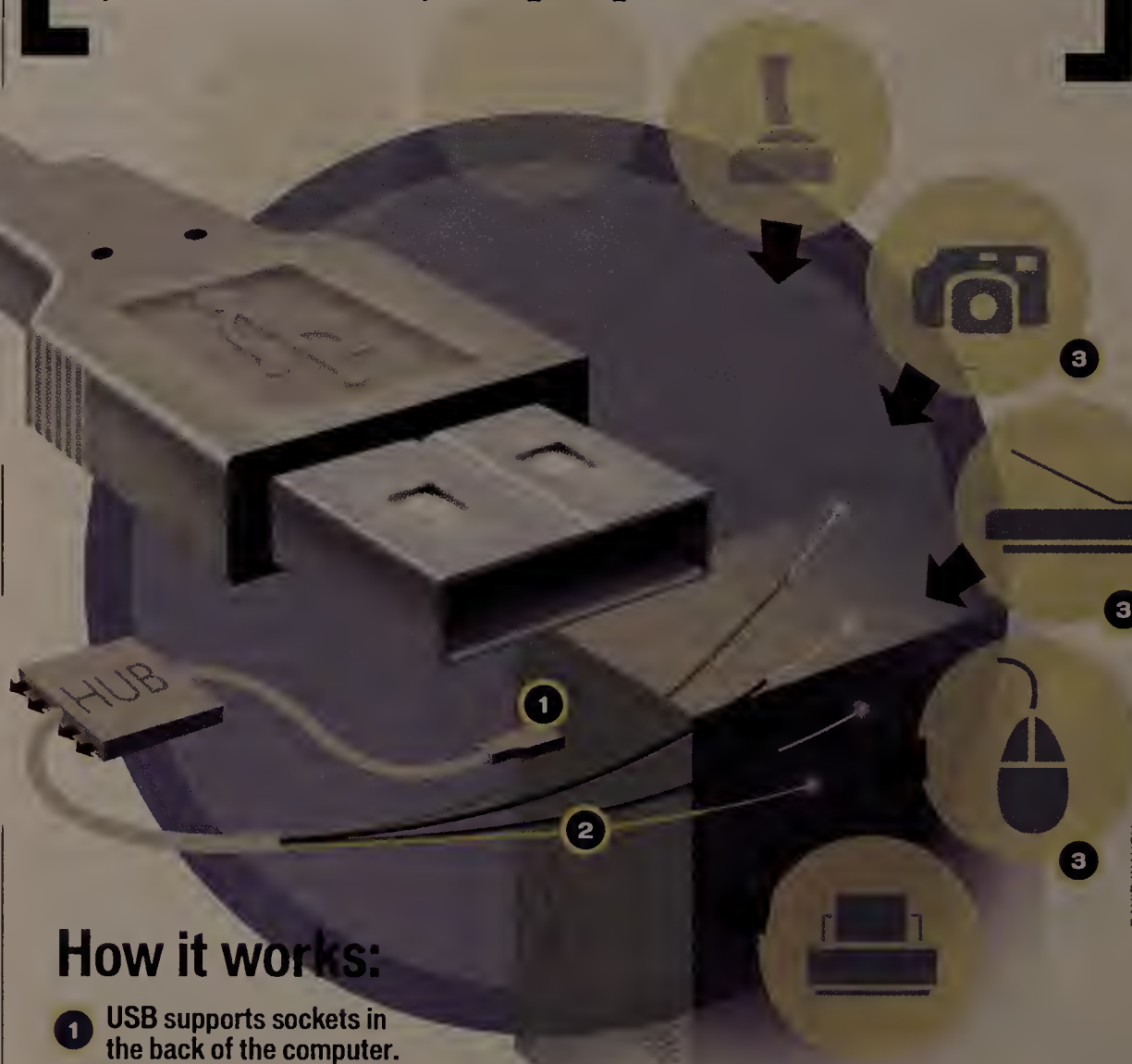
Management of devices is easy to control, Reynolds says. "USB allows me to stick all these things on my PC that would be a nightmare to manage, and it locks it or unlocks it for me. They can do away with silly passwords," he says.

Enderle adds: "This opens up a whole new class of components. High-speed monitors, networks, camcorders. If you had it, you'd love it." ▀

*Menagh is a freelance writer in Calais, Vt.*

## DEFINITION

**Universal Serial Bus (USB)** is a standard for connecting peripherals to a computer. Most PCs produced in the past year or so come equipped with USB ports. These are alternatives to serial or parallel ports. The USB connection is fast — 12M bit/sec. — and allows you to connect your peripheral.



## How it works:

- 1 USB supports sockets in the back of the computer.
- 2 The USB cable that connects into it contains four thin wires that will give up to 12M bit/sec.
- 3 You plug in your equipment, such as a USB-compatible printer, scanner or joystick, CD-ROM and more.

Each device has its own ID so that the network will know how much bandwidth to assign to it. This ID also contains information about the device, such as vendor and purpose.

When the device is unplugged from the socket, that's communicated to the applications, and the drivers are automatically unloaded.

Besides plugging and unplugging, the end user doesn't have to do any configuration of the devices.

DAVID WAUGH

## MOREONLINE

For more information on Universal Serial Bus, visit our Web site.  
[www.computerworld.com/more](http://www.computerworld.com/more)

# A WORD ABOUT THE NEW MANAGEMENT TEAM: **ATTITUDE**



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# SOFTWARE IS TOO DIFFICULT TO

A group of users and vendors is seeking, for the first time, to standardize ease-of-use ratings  
By David Orenstein

**R**IGHT NOW, corporate information technology managers and purchasers have no standard way to assess the usability of the software they buy, but within a few years it may be a matter of simply looking at the box.

Next month, a group of corporate users, vendors and experts will convene in Redwood Shores, Calif., to test what they hope will become a common method for evaluating the usability of software. The report, which a vendor would present to users, is analogous to nutrition information and ingredients on a food package. If the program is successful, it could save corporate software buyers millions of dollars by reducing the lost productivity or unnecessary training that hit when companies are unable to judge how easy software is to use.

State Farm Insurance Cos. in Bloomington, Ill., was all set a few years ago to spend more than \$5 million on an intranet-based career planning software package. But when the company brought the package to its usability lab, it made a huge savings.

Lab tests found that none of five test users was able to effectively complete the software's 40-hour regimen, says usability lab coordinator Jack Means. The results prompted State Farm, with its 75,000 desktops' worth of buying power, to walk away from the deal.

If vendors faced that danger all the time instead of rarely, experts say, IT would be a lot easier to use than it is today. The common report format would describe exactly how a vendor tested its software's usability by listing the demographics of the testers, the test tasks they performed and the results of the tests. The data will be sufficient, says Keith Butler, advanced computing technologist at The Boeing Co., to let companies replicate the vendors' tests to ensure their accuracy. The purpose of next month's meeting is to match users with vendors in pilot tests of the reports.

## Bottom-Line Value

The big question the pilot tests must answer is whether companies will find the reports valuable. "To make a convincing argument, we will need to have some hard data," says Sharon Laskowski, manager of the visualization group at the National Institute of Standards and Technology (NIST), which is facilitating and financing the effort. "If it's not affecting the bottom line, [companies] will not do it." There are now almost no hard numbers on the savings a company can achieve when it pays stringent attention to usability.

But heavyweight user companies such as State Farm, Boeing, Fidelity Investments, Eastman Kodak Co. and Northwestern Mutual Life Insurance Co. came to NIST two years ago to launch the effort, called the Common Industry Format for Usability Test Reports. Top computer industry vendors such as IBM, Compaq Computer Corp., Microsoft Corp., Oracle Corp., Intel Corp., Sun Microsystems Inc. and Hewlett-Packard Co. are also at the table.

After the players have conducted two and a half years of pilot tests, Laskowski says, the companies will take the data to a standards organization in hopes of changing the way IT purchases are made. It will be the difference, she says, between a customer vainly asking whether software is user-friendly and that customer having enough information to re-create the tests and validate the vendor's claims.

Milwaukee-based Northwestern Mutual has added to its standard request for proposals a paragraph that

specifically asks vendors for usability data. "If you've got it, we want it," says Eric Strandt, the insurer's manager of software product design. But the company is constrained by the reality that many vendors don't have that kind of information — and there's no standard that encourages them to come up with it.

Northwestern does send some software to the lab. "We've done quite a bit of that, with varying degrees of success," Strandt says. A few years ago, contact management packages were rejected after they all showed substantial usability concerns. Software from a small vendor, Corporate Software & Technologies in Montreal, beat out IBM to become the company's calendaring package because of its better usability. Northwestern Mutual would have saved end users considerable grief when it upgraded to Microsoft Office 97 had it done usability tests and found file format incompatibilities, Strandt says.

### Other Savings

State Farm has success stories of its own, but their benefits are less tangible than in the case of the career software savings, Means says. When the company was mulling a time and attendance management product, it assumed that administrative assistants would need three days of training. Usability tests showed that a mere half-day — or, at most, one — was needed. The savings: roughly two days' pay for each of approximately 10,000 assistants.

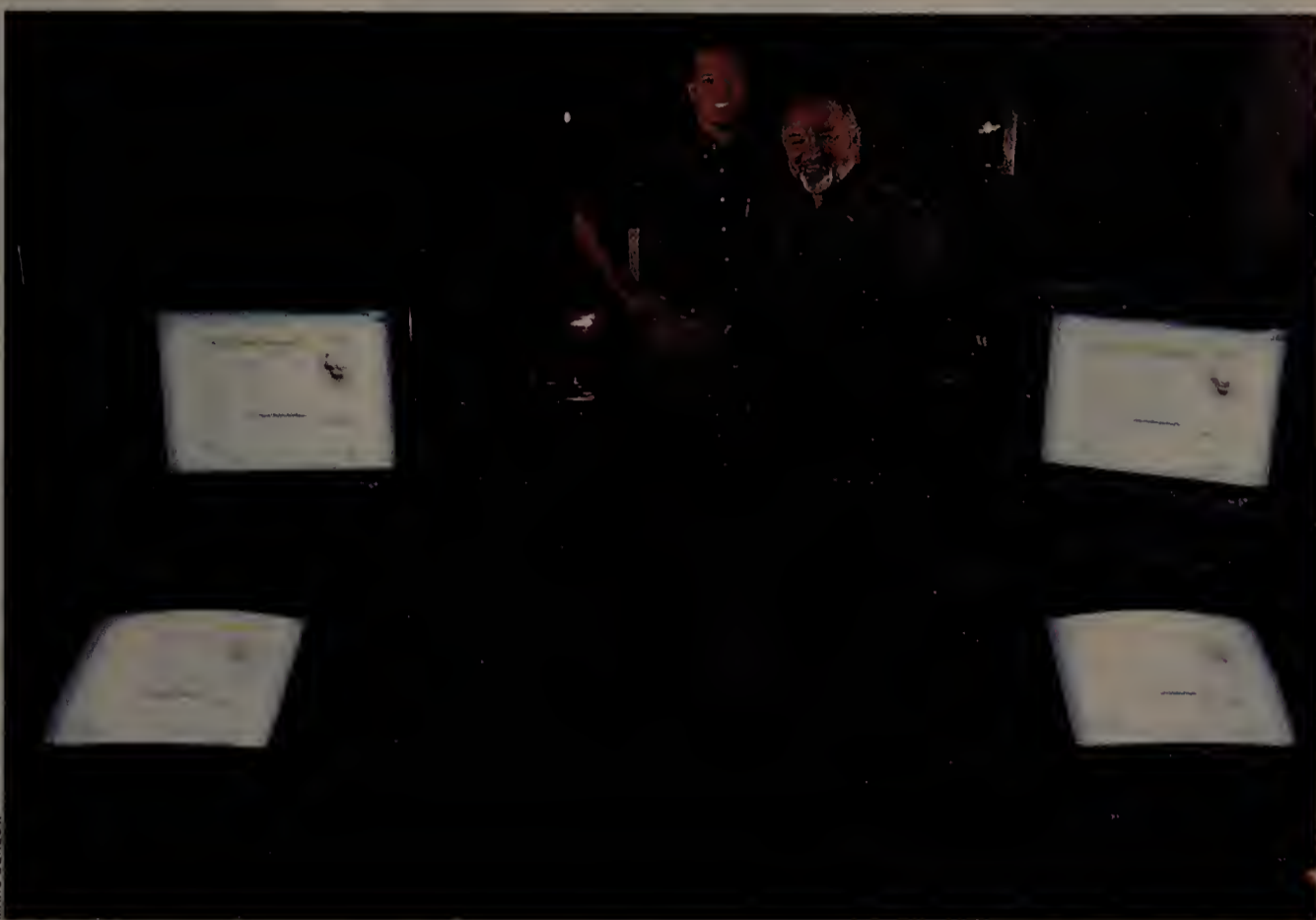
In general, usability labs, which first popped up in the early 1990s, are used to test software that's developed in-house. That's where potential savings are the greatest, because tests that reveal problems early in the development cycle can save months of developers' time — and, of course, prevent productivity losses when the application is deployed.

Usability experts such as Janice Rohn at Sun point to The Standish Group International Inc.'s Chaos studies, which have attributed many of IT's frequent project failures to a lack of end-user input. Usability professionals such as Means cite IBM research that the eventual return on a dollar spent on usability early in the development cycle can be up to \$100.

At Fidelity, usability testing is a growing practice — but not for software purchases, says Thomas Tullis, vice president of human interface design. The company is building a second lab to accommodate an increase in testing driven by the desire to make the company's Web sites more usable. The prospect of acquiring customers via a user-friendly Web site or the fear of losing them with a frustrating site has made companies much more sensitive to usability, say experts like Rohn and Harley Manning, an analyst at Forrester Research Inc. in Cambridge, Mass. "When you add the Web, everybody is a software company," Manning says.

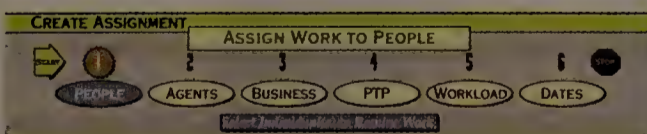
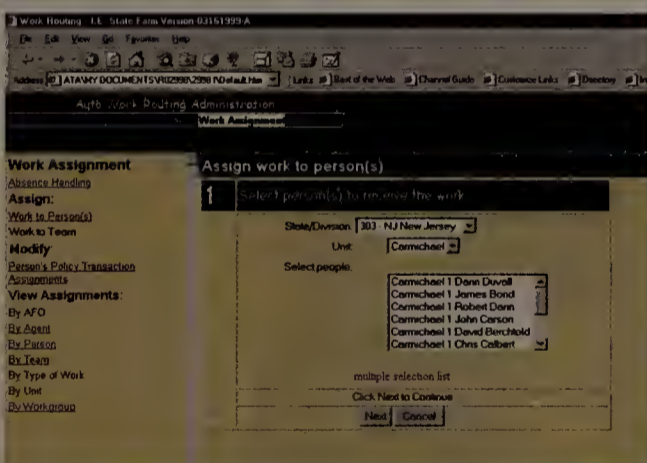
But the benefits Tullis and others see in improving their own software is harder to find when reviewing commercial tools. Although many usability professionals say their test results have been able to effect major changes in vendors' products, that's not the norm. The feedback loop isn't there, Tullis says. Butler agrees: "If we were to do the testing for our suppliers, it would have to be during the development of the product."

For the common industry format effort to take off, IT must make the usability of commercial software a top priority and hold vendors' feet to the fire, say experts, including Rohn. Although Rohn says she believes that a common reporting format would help vendors by clarifying what usability criteria users



STATE FARM'S DARRIN DUVAL (LEFT) AND JACK MEANS helped the company avoid installing a difficult-to-use software package. A visit to State Farm's usability lab put the last-minute kibosh on a planned \$5 million purchase

most want, she acknowledges that the added burden on vendors won't be welcomed unless customers make it a competitive issue. "It's a business decision,"



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James, Jerry	B	15A3	
Smith, Bob	A	15A5	
Ellis, Sally	A	15A6	
Kim, Jane	A	15A5	
John, L.	B		
Michael, Jim	B	15A3	
James, Roger	B	15A2	

STATE FARM DEVELOPERS changed this work scheduling and assignment application's interface after usability testing showed that end users working with the old interface (top) didn't realize that they had to follow a six-step process. If users jumped to a new page out of order, they would lose their work. The new interface (at bottom) made it clearer that a process had to be followed

she says. "The more the customers are telling this to vendor companies — that this is important — the more the vendor companies will take note."

As much as they want to cheer it on, many usability experts are skeptical about the reporting form's prospects. Either they worry that user companies will show the resolve necessary to nudge vendors beyond lip service, or they're not sure the reports will specify anything useful enough. Usability's benefits, after all, have proved difficult to quantify so far.

Manning says usability testing ultimately won't gain much ground. Surprising as it may be, he says, quality hasn't ranked as the primary priority in software purchases. "Do you pick up software boxes that tell you how bug-free the software is?" he asks. "We buy buggy software all the time." Meanwhile, he adds, "the usability community constantly struggles for attention."

Moreover, usability testing can run into difficulty because it's often conducted with a small sampling of testers. Users vary widely in their skills and intelligence. One particularly savvy or dim user can skew the results abnormally.

Laskowski says the common reporting format would at least elicit enough detail from vendors so that customers would know how much experience a vendor's testers have. The customers would also see which features were tested, so they could determine whether the vendor tested the features they want.

Even users directly involved in the project concede that it may not achieve the ideal goal of making usability data as visible in software purchasing as nutrition data is in food purchasing. "I think the resolve varies," Strandt acknowledges.

"I certainly hope it is going to take off," Tullis says. But if the effort ultimately results only in heightened awareness about the importance of usability testing, he says, that will be a major benefit in its own right.

It's a worthy effort, Manning says. "It might help if users revolted a little." ■

# SOUND

## AND (SOMETIMES) FURY



ELLEN WEINSTEIN

Sound adds a useful dimension to corporate intranets . . . and a few gray hairs for IT By Cynthia Morgan

**T**HE DAY is fast approaching when some executive will have a singularly bright idea: Why not fill in the blanks of his otherwise terse slide show with the recorded speech that went with it, and post the whole shebang on the corporate intranet? It would make a more informative presentation and save him from repeating the speech to every new employee.

He's right. Audiovisual experts say sound paired with still images or text can have nearly as much impact and information as video without the high costs of producing and transmitting video clips across the network. It's also a good step toward preparing your network for the inevitable onslaught of rich media.

I've been experimenting with adding useful sound to network presentations for the past few months. Despite vendor claims, standard desktop software can't always cope with multimedia demands. Slide presentation software has a difficult time synchronizing text and speech. And building sound into animated slide shows, a corporate mainstay, is difficult. Unless you use the right tools, your audio efforts could wind up being a lot of effort for not much benefit.

A WAV file, the typical format for digitized sound, tends to be very large and unsuited for transmission across a network, in part because it contains a great deal of information that the human ear can't perceive. A coder/decoder (codec) application can compress those files into smaller encoded files.

One technique, perceptual audio encoding, confines its compression activities to sounds outside the range of normal human hearing. Those codecs, in-

cluding RealNetworks Inc.'s G2, Microsoft Corp.'s Windows Media and the nonproprietary MP3, leave a high percentage of the original sound data in the file after compression.

But your choice of codec depends less on the quality of its output than on its production considerations.

In my tests, G2 shaved a few seconds off total encoding time and also streamlined the production process. Xing Technology Corp.'s MP3 encoder was the hardest to use, although it was generally a fast processor once the settings were correct. Windows Media spent more time in encoding, and its setup was sometimes confusing — there are a lot of subtle steps you can take to enhance the final result, but learning where they are can be time-consuming. If you plan to compress large batches of sound files regularly, those small differences really add up.

Encoded sound files in hand, I set out to marry them to a slide presentation and publish the package on the Web. I turned a few extra hairs gray as I built a simple Microsoft PowerPoint 2000 presentation to augment a *Computerworld* Minute — an audio news report we publish daily on our Web site. Then I tried to synchronize it with my encoded sound files.

Right away, I discovered that, although PowerPoint can play a single sound file across multiple slides, syncing images with appropriate spoken sentences is a tedious matter of trial and error. Lotus Development Corp.'s Freelance Graphics wasn't much better, although it's clearly better suited for building online shows. Rather than spend hours trying to match up the entire presentation, I broke the sound file into components I could sync with a particular slide.

The typical corporate speech includes unwanted dialog or noise. So in addition to PowerPoint, I needed a sound editing tool. I chose Sonic Foundry's \$499 Sound Forge 4.5.

Sound Forge is almost the de facto "word processor" of sound editing; you can cut, paste, drag and drop a visual graph of the file, and you can apply effects such as fade-in or fade-out. I used it, for example, to clean up the heavy breathing of one speaker, fade music to silence and fill in dead air. You can save money by opting for the \$99 "lite" version, Audio-Anywhere, which includes a less extensive version of Sound Forge. That's probably all you'll need, plus Sonic Foundry's Acid Style music authoring tool and hundreds of public domain sound clips.

PowerPoint doesn't handle G2, unfortunately. To make up for it, RealNetworks offers RealSlideshow, a free download that offers more powerful rich media features but is less than stellar at anything else. It's far better at creating online presentations because it tracks overall download time and will automatically

publish to a streaming G2 server on the Web. It also lets your presentation carry two separate tracks of audio, so you can have background music and a voice-over simultaneously, something PowerPoint had trouble with.

But RealSlideshow wouldn't accept my imported presentations; it works only with JPEG or bit-map images. Music and image editing tools were almost nonexistent. Although I could specify which image linked to which sound file, fine-tuning timing was impossible. The program mangled our slide images no matter how I tinkered with compression settings, making text almost unreadable. You'll have to add legible text later using RealNetworks' RealText editor, which is a lot harder than simply typing words on the page and adds considerably to production time.

Of course, PowerPoint and RealSlideshow aren't the only programs that can place sound-and-image files on the Web. I had better luck with Kai's PowerShow, \$50 from MetaCreations Corp. It handles presentations reasonably well and offers precise sequencing of sound, image and simple animation.

If you'll be augmenting a lot of existing presentations with sound, you should strongly consider switching to PowerShow or other low- to midrange multimedia authoring tools. For higher-end uses, such as building interactive tutorials, consider Digital Lava Inc.'s video publishing system (read more about it at our Web site), which not only joins sound and images but also indexes files by keyword and provides navigation points throughout the presentation.

*Computerworld* covered the ins and outs of setting up streaming audio servers in a previous issue [Technology, June 28]. Until recently, the choice of a streaming server was dictated by the particular codec you were using. But that's rapidly becoming a moot point: New streaming server software products, such as Sonic Foundry's StreamAnywhere, now in beta, can stream music created by the most popular codecs.

(Note: *Computerworld* uses RealNetworks' G2 encoding and streaming media server to record and transmit the *Computerworld* Minute. It's an easy-to-use, low-maintenance system, and the player is readily available. Our sound engineer, Aaron Bishop, says there hasn't been much call for the Windows Media editions; because the players are free, most people simply download both. And either player can handle MP3.)

The final results? You can see (and hear) sample files on our Web site. In the end, I chose to put up with PowerPoint's limitations; I simply don't do enough to warrant the steep learning curve of a multimedia authoring tool. ■

# GLOSSARY

If your organization intends to deploy multimedia files across the network, you'll likely encounter many of the following buzzwords.

**BAND:** A range of frequencies that fall within two definite limits.

**BIT RATE:** The average number of bits that one second of multimedia data will consume. Usually measured in kilobits per second (K bit/sec.), it can be used to describe how much compression has been applied to a multimedia data file and can be a measure of sound quality as well.

**CD RIPPER:** A program that pulls audio tracks from a CD and converts them to digital WAV format.

**CHANNEL:** A stream of sound intended to be reproduced through a single output device such as a loudspeaker. Monaural sound, for example, has a single channel that can't be split into additional channels. Standard stereo sound, on the other hand, has two channels: treble and bass.

**CODEC:** Stands for compression/decompression, or coder/decoder. A codec manages the process of turning digital multimedia data — such as sound or video — into a form that can be sent across a network and received on the other side with as little loss in quality as possible and minimal impact on resources such as bandwidth.

**DECODING:** The process of converting an encoded (compressed) bitstream back to its original format.

**ENCODING:** The very complex process of converting uncompressed digital data into a highly compressed and coded form known as a bitstream. In order to be played, the bitstream must be uncompressed, or decoded, and returned to its original format.

**FREQUENCY:** A single repetition of the soundwave's shape is known as a waveform or cycle. The frequency of that

sound is the number of cycles the wave goes through in one second, measured in hertz (Hz). The more waveforms that occur in one second, the higher the frequency. The higher the frequency, the higher the tone (pitch) of the sound.

**LOSSY COMPRESSION:** A technique of reducing file size by discarding data. Once discarded, data can't be retrieved. Lossy compression techniques produce small files that don't need to be decompressed in a separate step before use, but the trade-off is some loss of quality.

**LOSSLESS COMPRESSION:** A technique of reducing file size by eliminating redundancies. Lossless compression formats, such as Zip, must be expanded before use, but they reproduce the original file exactly, without data loss.

**MP3:** First, it doesn't stand for MPEG-3. It's short for MPEG-Audio Layer 3 and is the third in a series of audio compression scheme standards maintained by the Moving Picture Experts Group. MP3 is generally thought to produce better final sound quality than its predecessors, at a much higher compression rate.

**SAMPLING:** Sound is, by definition, an analog phenomenon because it occurs in continuous waves. To be used in a computer, it must be converted to a digital format. In order to do this, instruments measure, or sample, the frequency of the sound wave at specified intervals. That's known as the sampling rate. The higher the sampling rate, the more samples per second are taken by these instruments, and the truer the digital version will be to the original analog sound wave. However, the higher the sampling rate, the larger the resulting digital sound file will be — because the number of samples being saved increases as well.

**WAV:** Short for "waveform audio" and pronounced "wave." WAV is one of the most common uncompressed digital audio formats.

## Sound Quality: Not a Corporate Issue

Any of the codecs I tested produced far better audio quality than the typically cheap set of corporate speakers can detect.

The more compression the codec performs on a sound file, the smaller the file size . . . and the higher the chances for poor-quality sound. Because sound quality is a key strategy in the battle for audio codec supremacy, codec developers have spent a lot of time pointing out deficiencies in rival codecs.

I was curious as to just how much difference the average corporate user would find between leading codecs, so I tested 10 sound and voice files encoded from CD and in the studio.

I encoded the samples at bandwidths suitable for a slow (28.8K bit/sec.) modem, Integrated Services Digital Network and Ethernet network connections, using the latest versions of G2, Windows Media and Xing's MP3.com.

We then judged sound quality using different output devices:

- High-quality stereo headphones (Sony MDR-F1, about \$250).
- High-quality speakers (Bose Acoustimass-3, about \$350).
- Typical headphones (Sony MDR-009VPC2, about \$12).
- Typical speakers (Sony SRS-PC41, about \$30).

The high-end headphones easily detected differences between original and encoded/compressed sound files. There were marked differences between the encoded samples. I detected subtler differences with the Bose speakers, sometimes drowned out by environmental noise.

None of this mattered once we'd tried the same tests with our "typical" speakers and headphones. Aside from slight differences in volume, the files were nearly indistinguishable.

Lousy speakers produce lousy sound, and on most corporate desktops, that's as good as it gets. Base codec choice on user demand, platform and ease of administration. — Cynthia Morgan

# The Rise of Sun

*Fledgling company envisions open system leading to better technology, lower prices*

BY LESLIE GOFF

**R**IGHT FROM the beginning, in February 1982, starting with the name and extending to the technology, there was a sort of religious ambience around Sun Microsystems Inc.

The name was a jab at competitor Apollo Computer, named after the Roman sun god. Employees saw themselves as on a mission to evangelize a change in how information technology operated rather than just to sell a product. And the Unix proselytes, Sun's early customers, had a zealous devotion to the operating system. To them, Sun's message was sacrosanct: high-volume, low-priced, networked workstations with an open archi-

ture running the first commercial-strength version of the hallowed operating system.

"There was a lot of loyalty to Unix — people felt religious about it," says Andy Bechtolsheim, who co-founded Sun along with fellow Stanford University alums Scott McNealy and Vinod Khosla and Berkeley Unix guru Bill Joy. "The open-system philosophy Scott exudes so well today really existed all along," says Bechtolsheim, now vice president of engineering at Cisco Systems Inc.

"Open Systems for Open Minds" was the fledgling company's first slogan, recalls Jay Puri, the company's first marketing person and now vice president, worldwide sales of software and tech-



McNEALY: An open-system philosophy



CLARK: Sun's emerging rival

Apollo's product was more mature, it had a closed architecture and a proprietary Aegis operating system, Puri says.

McNealy, Puri and Khosla flew to the East Coast to make one more bid for the business. When they arrived at Computervision, the company president wouldn't see them. So they waited in the lobby all day and cornered him on his way out of the building. The three sold him on their vision of the future: an ultimate shift to open systems, leading to more innovation, better technology and lower prices.

"We knew that Computervision would be a company-

making deal, and we said we're going to get that business no matter what," Puri says.

And they pulled the contract right out of Apollo's hands, feeding the rivalry and giving the company a leg up on another emerging competitor founded in 1982, graphics workstation maker Silicon Graphics Inc., launched by James B. Clark and seven colleagues.

Sun's deal with Computervision "sealed our reputation in the marketplace and led to a lot of follow-on business," Puri says. It also was a defining moment in the company's corporate culture, he adds: "Never take no for an answer." ■

## Arpanet Adopts TCP/IP

*Allows for easier access to Internet*

BY LESLIE GOFF

While Sun Microsystems Inc. was promoting networking by being the first computer maker to include an Ethernet port as a standard feature on its workstations, a key decision by the standards committees governing Arpanet was about to blow networking wide open in 1982.

After eight years of working

toward a standard protocol for connecting to Arpanet, the committees formally adopted Transmission Control Protocol (TCP) and the Internet Protocol (IP).

"That put the protocol in the users' hands ... and made it easier to build an interface to the network," says Larry Roberts, known as the father of the Internet and a participant in the standard's adoption. "There was a standard interface before, but it had to be hard-wired. TCP/IP changed

the growth rate [of the Internet] because it made it easier for people to get access."

Before the formal transition to TCP/IP began the following year, only 562 host computers were tied into the network and average peak traffic was around 5K bit/sec., Roberts says. The new protocol suite doubled both hosts and traffic within the first year, and they continued to double each year after that until 1997, when traffic started to outpace host growth. ■

Goff is a frequent contributor to Computerworld. Contact her at [lgoff@ix.netcom.com](mailto:lgoff@ix.netcom.com).

# 1982

The U.S. Department of Justice dismisses the 13-year-old antitrust lawsuit against IBM.

*Time* magazine replaces its traditional "Man of the Year" cover with the "Machine of the Year," the computer. Publisher John A. Meyers writes that no human "symbolized the past year more richly, or will be viewed by history as more significant, than ... the computer." The main writer for the issue completes his assignment on a typewriter.

Mitch Kapor starts up Lotus Development Corp. in Cambridge, Mass., with eight employees. At Comdex/Fall '82 in November, the fledgling company introduces its 1-2-3 spreadsheet,

promising that it will "have your IBM PC jumping through hoops." Kapor developed the spreadsheet by writing the software directly into the video system of the IBM PC, bypassing DOS. It gains a competitive edge by running faster than its competition and combining its spreadsheet capabilities with graphics and data retrieval.

Autodesk Inc. is founded and ships the first version of AutoCAD.



Rod Canion (left), Jim Harris and Bill Murto, former senior managers at Texas Instruments

Inc., found IBM PC clone maker Compaq Computer Corp. in Houston. The start-up introduces the Compaq Portable PC, featuring an IBM-compatible ROM BIOS.

Apple Computer Inc. reaches \$1 billion in revenue. Amid its financial success, several events take place that will ultimately alter the company's future: The company announces its doomed Lisa microcomputer; it ships Microsoft

Corp. a prototype Macintosh so the software company can begin developing applications; and John Sculley, president of PepsiCo Inc., visits Cupertino after a headhunting firm asks him to consider becoming Apple's CEO.

Epson America Inc. introduces the HX-20, a notebook computer.

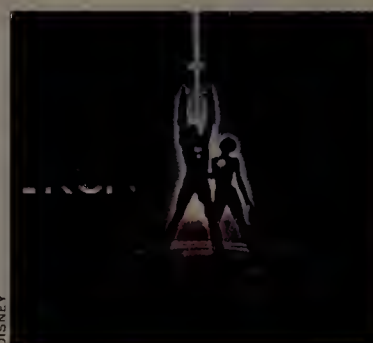
By April, only eight months after the introduction of the IBM PC, Big Blue has sold 50,000 units, and by July, it ships its 200,000th PC. Still basking in the success, IBM divides to conquer, separating its PC development team into three distinct groups: one to work on the PC/XT, one to develop the PCjr and one to start work on the PC/AT.

Intel Corp. rolls out the 6-MHz 80286 microprocessor — the first Intel processor that could run all the software written for its predecessor. Within six years of its release, there were an estimated 15 million 286-based PCs installed around the world.

Patricia Gallup and David Hall found

catalog company PC Connection to sell computers and peripherals direct.

Columbia Data Products Inc. introduces the MPC, one of the first IBM PC clones.



The Disney movie *Tron*, one of the first movies to use computer-generated graphics, is released. Computer animation accounts for about 30 minutes of the film. *Tron* follows the adventures of a hacker split into molecules and transported inside a computer.

Storage device maker Iomega Corp. begins production of the Alpha 10, a 10M-byte, 8-in. floppy disk drive

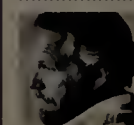
using Bernoulli technology.

DOS and CP/M, the little microcomputer operating system that could, battle it out for the hearts of users. While Microsoft ships two new versions of MS-DOS — Version 1.1 for the IBM PC and Version 1.25 for IBM-compatibles — Digital Research Inc. releases CP/M+, and IBM begins offering CP/M-86 for its PCs. Meanwhile, several devices running under CP/M appear on the market.

Mouse Systems Corp. releases the first commercial mouse for the IBM PC.

PC-Talk, a communications application developed by Andrew Fluegelman, becomes the first copyrighted program distributed as shareware.

Hewlett-Packard Co. introduces the HP 9000 technical computer with 32-bit "superchip" technology.



John Warnock (left) founds Adobe Systems Inc. with Charles Geschke.





# Hub of High-Tech Opportunity



GREATER BOSTON CONVENTION &amp; VISITORS BUREAU

**Boston lays claim to some of the best colleges, hospitals and sports legacies in the country – not to mention one of the top IT job markets**

**By Steve Alexander**

**R**ENOWNED for its history and as an academic center, Boston has also gained notoriety as one of the top high-tech regions of the country. IT pros seeking openings there will find myriad opportunities in financial services, health care, high-technology and education, but they should be prepared to deal with a high cost of living.

The city's top information technology employers are in the field of finance, says Daniel J. Walsh, president and chief operating officer at Darwin Partners Inc., a Wakefield, Mass., recruiting firm. High-tech companies rank second, while health care is third, he says.

But tight federal cost controls on health care providers have somewhat diminished the money available for hiring IT professionals, says Juli Ann Reynolds, managing director at the Boston office of New York recruiting firm Russell Reynolds Associates Inc.

Education is a bit less attractive,

Walsh says. Despite the large number of colleges and universities in the Boston area, he ranks it fifth or sixth in terms of IT job opportunities.

Boston's cost of living is high, Walsh says. And residents have been known to refer to the state as "Taxachusetts." "If you're going to live downtown, you need to make \$40,000," he notes, but the cost of living is \$5,000 to \$10,000 less in suburbia.

IT professionals in Boston offered a sense of the opportunities in their fields, as well as what it's like to live and work in the metropolitan area.

## Financial Services

The traditionally formal financial services market is loosening up and offers rising IT salaries.

Hot skills in the financial sector include more than two years of experience in WAN networking, C++ programming or PowerBuilder, says Donald MacKinnon, senior vice president for information services at Liberty Funds Group, a Boston money management firm. "Salary ranges for some

of those skills have gone up 15% to 20% in the last year," MacKinnon says.

Boston firms are relaxing their work culture, MacKinnon says. "More and more companies are adopting casual wear during the summer or at least one day a week. They're switching from the stodgy, button-down approach because employees like it."



**LIBERTY FUNDS'**  
**Donald MacKinnon**  
has seen Boston's  
IT salaries rise

As a place to live, Boston offers IT pros an unequaled mixture of history, culture, colleges, large hospitals, major sports franchises and proximity to the mountains and ocean, MacKinnon says. But Boston also "is a city where you get to live in four seasons," which makes it attractive to some people and not others, he says.

## Health Care

Health care is one of the giants of the Boston IT market, but it sometimes has difficulty competing for staff with financial services and technology firms.

Health care is appealing to IT professionals interested in cross-training or learning skills outside their existing areas of expertise, as well as to those who want flexible hours, says Meg Aranow, the CIO at Boston Medical Center. In addition, she finds that "the mission of a hospital appeals to some people."

But health care has some disadvantages when it comes to hiring. One is that health care hasn't moved into Web and Windows NT development as quickly as other industries have, partly because hospital computer system vendors were slow to come out with NT applications, Aranow says. In addition, health care can't always afford to match the salaries IT pros can get in the financial services and technology industries, she says.

But salaries in Boston health care companies are 5% to 7% higher than a year ago. An NT or Unix programmer with three to five years of experience can earn \$75,000 to \$85,000, Aranow says. The IT professionals most in demand include Unix and Web programmers and people who can work with

"interface engines" that help hospitals exchange clinical and billing data with other firms. "The supply of experienced Unix and Web programmers is very tight, while the supply of NT programmers is tight but not as bad," she says.

Aranow considers one of the benefits of living in Boston to be "universities, which provide a constant influx of new smart people into the marketplace." The biggest challenges for newcomers are the high cost of housing and shortage of rental property, she adds.

## Colleges and Universities

With its preponderance of colleges and universities, Boston has long been viewed as a center of higher learning. These institutions provide a variety of opportunities in Boston that offer flexibility, but often pay less than jobs at corporations.

"There are probably 30 educational institutions, so you can move back and forth among them," says Micheline Jedrey, vice president for information services and college librarian at Wellesley College in Wellesley, Mass.

"Like most educational institutions, we have proportionately more women than most IT shops. I think it's because

we have more flexibility and less emphasis on profit and the bottom line," Jedrey says. "We're successful at hiring escapees from the corporate environment."

Jedrey, who has 45 IT employees, is seeking skills that include Oracle database, C++, teamwork and understanding instructional design over a LAN. "We purchase a lot of off-the-shelf products, so we don't hire a lot of program-

mers. Our most successful strategy has been to grow our own through internship programs." She says Boston is "a place where there is history, a symphony, a museum of fine arts and lots of places to eat and drink and have fun." ■

*Alexander is freelance writer in Edina, Minn.*



**MEG ARANOW** of  
**Boston Medical**  
**Center** says health  
care has difficulty  
luring IT pros



**WELLESLEY COL-**  
**LEGE'S** Micheline  
**Jedrey: Education**  
**IT jobs are flexible**

## Filling the Bean Pots

Average annual salaries for IT staffers in Boston

JOB TITLE	EXPERIENCE		
	1-2 YRS.	3-4 YRS.	4+ YRS.
Network administrator/analyst	\$43K	\$51K	\$58K
LAN manager	\$45K	\$52K	\$64K
Project manager, systems and programming	\$49K	\$58K	\$69K
Senior systems analyst	\$53K	\$57K	\$67K
Senior systems programmer	\$50K	\$54K	\$62K
Senior programmer analyst	\$45K	\$50K	\$56K
Programmer analyst	\$38K	\$44K	\$47K

SOURCE: COMPUTERWORLD'S 1999 MID-YEAR SALARY SURVEY

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### System Administrators:

UNIX; NT; shell script programming; Sun Solaris

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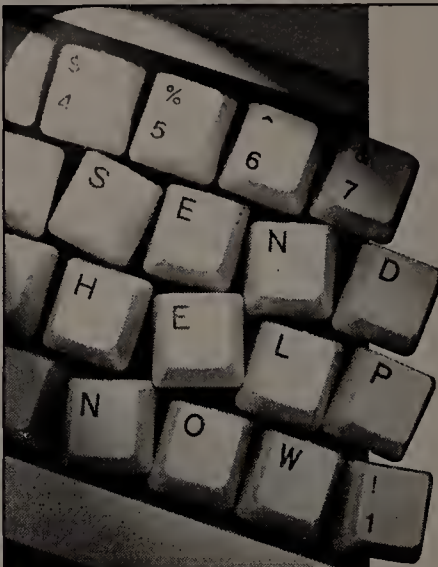
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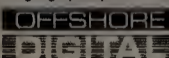
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Electronic Commerce Developer needed for s/ware mgmt co. in Norwood, MA to dsgn, dvlp & implmnt active server pages on MS Internet Info Server using MS VB Script, MS ASP & MS SQL-Server, troubleshoot, maintain & enhance EC sites; evaluate, dsgn, dvlp & implmnt new tech for web dvlpmt; present leading edge technical & bus solutions to Internal Business Groups; BS (or equiv in edu & exp) in Comp Sci & 2yr exp in Client-server dvlpmt. Send responses to Box I-11903, Computerworld, 500 Old Conn. Path, Framingham, MA 01701. Attn: Recruitment Advertising.

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To apply for these positions, please include Job Code: A5/0000/000 in the subject line of your E-mail, fax or cover letter and submit your resume to: Sun Life of Canada, P.O. Box 540375, Waltham, MA 02454-3075; Fax: (781) 663-2458; E-mail: sunlife@hiresystems.com We are an equal opportunity employer. Principals only.

Senior Software Engineers - Design, develop and implement applications in multi-tier, client-server environments using C++, Visual Basic, ActiveX components, ADO, RDO, COM, DCOM, SQL Server. Architect and implement database and datawarehouse applications for Oracle Financials and GEMMS using OFA, OSA, express server; techniques include MOLAP, ROLAP and Star Schema. Req'd: MS/CS, 5 yrs exper. in software development, demo'd knowledge of & exper. w/VB & ActiveX Suite OR w/Oracle Financials & express server. Reply to: CW-I-11919, Computerworld, Box 9171, Framingham, MA 01701-9171.

Software Engineer. Design and develop object oriented technology, application software using tools/languages such as C, C++, Java, Unix. Network relational and database management systems, GUI's. Work with SNMP to develop network management systems. BS (comp sci, eng rel field/equiv) and 5 yrs exp. (or 5 yrs exp as systems analyst/programmer). 40 hrs/wk. Send resume to: Hiring Manager, Software Experts, Inc., 83 Second Avenue, Burlington, MA 01803.

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Senior Software Consultant needed by Software Consulting Co. in NY, NY. Must have exp analyzing, dsngng, dvlpng & testing complex business software systems using Visual C++, MFC, OLE, COM, OOD, OOA, Object Oriented Modeling in a Windows NT environment. MS/BS In Comp Sci/Comp Engineering req'd. Only experienced candidates need apply. Respond to: Alex Casas, Avenir, Inc, 1 World Trade Center, Suite # 7867, New York, NY 10048.

Programmer/Analysts needed by Computer Consulting Firm. Multiple openings in the following practice areas: Oracle, PL/SQL, Sybase or Powerbuilder. Must have Bachelors or equivalent in Comp Sci, Math or Engg & 2 yrs software experience. Please send resume to HR Dept., Vitech Systems Group, Inc., 404 Park Avenue South, 5th Floor, New York, NY 10016.

Director, Technical Operations sought by New Media Services Co. in Ft. Lee, NJ. Must have Bachelors in Engineering, Math or Comp Sci & 2 yrs exp directing & coordinating technical operations for internet services using electronics engin. skills to dvlp & operate new technology for large multinational fin'l services clients. Respond to: D. Levy, Next-Venue, Inc., 2200 Fletcher Ave, Ft. Lee, NJ 07024.

Software Engineer wanted by Virginia-based Computer Services Co. for job loc in Middletown, NJ. Must have Masters in Comp Sci, Comp Engg or CISE and 6 mos exp analyzing, dsngng, dvlpng & debugging s/ware using C/C++, SQL and shell scripts in UNIX & Windows envrmt. Respond to: HR Dept, Massie Technology, Inc, 11350 Random Hills Rd, Ste 800, Fairfax, VA 22033.

Applications Analyst (Human Resource Information Analyst) needed by Cancer Research & Treatment Hospital in New York City. Must have Bach or equivalent in Mgmt w/ Computer or Comp Sci or related and 2 yrs exp dsngng, implmtng and monitoring various financial or management projects and dsngng s/ware applies for specific bus needs & dvlpng d/bases for managing system info. Respond to: Brian Staulcup, Memorial Sloan Kettering Cancer Center, 633 Third Ave, 5th Flr, New York, NY 10017.

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**SYSTEM ADMINISTRATION SUPPORT:** Design and develop applications in object-oriented environments such as Java and C++. Perform software quality assurance related activities periodically and will define and maintain the infrastructure necessary to provide accurate information about engineering project management. Will research and support development to have on time product delivery. Requires: B.S. in any engineering or quantitative degree and 1 year experience in software development in C. Knowledge of programming in C and C++ in a Windows95 and WindowsNT environment. Experience may have been job-related or academic. 40 hrs/wk (9 to 5); \$59,800/yr. Send two resumes/response to Case #19981876, Box 8968, Boston, MA 02114.

Database Administrator wanted by IS/IT Consulting Services Co. in New York City for unanticipated locs throughout US. Must have Bach in Comp Sci or Comp Engg and 6 yrs s/ware exp. Respond by resume to: HR Dept., Intermedia Group, Inc, 5 Hanover Square, 15 Fl, New York, NY 10004.

Programmer Analyst wanted F/T by Co. in Skillman, NJ. Must have Bach in Comp Sci, Comp Engg or Math & 1 yr exp analyzing, dsngng, dvlpng C/S applies using C, Perl, Javascript and Sybase on Unix platform. Respond to: HR Dept, Optimal Solutions Inc, 3 Richmond Dr, Skillman, NJ 08558.

Project Manager/Systems Analyst needed F/T for NJ Comp Info Consulting Co. Job Location: Bethlehem, PA. Must have 1 yr exp overseeing team in dvlpng Client-server sys & applic prod using C, C++ across Unix, VMS & OS/2 operating sys with RDBMS in financial services envrmt. Master's in Comp Sci or Comp Eng needed. Respond to: HR Dept., Matrix Information Consulting, Inc., 365 W Passaic St., Rochelle Park, NJ 07662.

Programmer Analyst wanted by Optimal Solutions, Inc. in Skillman, NJ. Must have Bach in Comp Sci or Math or any Engg field and 1 yr exp analyzing, dvlpng & implmtng s/ware applies & modifying systems capabilities using Oracle, PL/SQL, Reports on Win NT platform. Respond to: HR Dept, Optimal Solutions, Inc, 3 Richmond Dr, Skillman, NJ 08558.

EDI/EC Consultant (Atlanta) - Support strategic/tactical plan of EDI softwr/netwk serv., research EC technol. & EDI technical implement., write/edit syst./user document., EDI presentations, write/respond to proj. props., re-engineer busin. process as related to EC, EC audit/control rws, develop EC train'g manuals, conduct EC train'g, integrate EDI into technical/busin. soluts. B.Sc. Comp. Science or equiv. + 4 yrs. exp as EDI Mgr & EDI Consult. Proven record of integrate EDI into technical/busin. soluts. Proficient in SAP R/3/TLE/STX/UNIX/NT/IBM MVS/Bisync/Async/TCP/IP. \$70,200/yr, 40 hrs/wk, OT as need. Send resume to: S. Stevenson, 750 Commerce Dr., Ste 100, Decatur, GA 30030.

**SOFTWARE ENGINEER** to design, develop, implement, test, maintain and support application software systems in 2- and 3-tier client/server architecture using Visual Basic, SQL Server, Oracle, C++, ODBC, Erwin, Active X, COM/DCOM, MTS and OLAP Analysis in Windows 3.1/95/NT and MS-DOS environments. Require: Master's degree in Computer Science, Engineering, Mathematics, or other closely related scientific field, with one year of experience in the job offered. Extensive travel on assignments to various client sites within the U.S. is required. Salary: \$60,000 per year, 8:00 am to 5:00 pm, M-F. Send resume to: Narayan Swamy, President, Professional Software Consultants, Inc., 320 Wyehwood Ct., Alpharetta, GA 30022; Attn: Job SG.

Software Engineer: to provide Internet solutions. To interact with managers, customers and end users of Internet based applications that are appropriate to business requirements. To utilize appropriate front-end software tools to achieve optimum combination of end user requirements and intuitiveness. To implement software solutions utilizing appropriate relational database management software solutions. Must have MS degree or equivalent in computer science or related field. Proficiency in ASP, JAVA, Visual Inter Dev., and MS-SQL in Unix & Windows NT (4.0) environments. \$63,000.00 /year, 40 hr/week, 8:30a.m.-5:30p.m. Send resume to Third Millennium Communications, Inc., Corporate Recruiter, 125 Clairemont Ave., Suite 400, Decatur, GA 30030

Software Engineer must have Eng or math w/2 yrs exp or Sci deg w/4 yrs exp in dsngng, devlpng & implmtng comp sys for bus applications. Must be proficient in: ORACLE Financials, UNIX, PowerBuilder, VisualBasic, SQL, PL/SQL, SQL Forms and Reports, and Windows NT. Must be willing to relocate throughout US for varying periods of time. Responsible for: dvlp't & implementation of lrg application s/ware sys using bus & eng anal, math models, comp lang & d/bases working in 1 or more h/ware &/or s/ware envrmt. Simultaneously for complex bus projects in-house or at client locations; plan and formulate engrngnng program and orgz project staff according to prjct requirmnts. Salary \$61,000/yr, 40hpw. Send two resumes to CodeSoft, 47 Perimeter Center East, Suite 305, Atlanta, GA 30346, Attn: Human Resources.

Sr. Software Consultant needed by IS/IT Consulting Services Co. in Metuchen, NJ for client locs throughout US. Must have Bach in Comp Sci and 2 yrs computer s/ware consulting/dvlpmt experience. Respond to: HR Dept, Avenir, Inc, 16 Pearl St, Ste # 205, Metuchen, NJ 08840.

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Software Engineer: Design and develop a multi-thread Telephony Call Control model for use in small and medium sized businesses for a network based telephone system using Object Oriented design principles; build high performance telephony engine with error and recovery support along with integration to other components of the system like TAPI and VoiceMail. Write database API and laying out the database schema allowing access to the database from the Call Control model and an administrative tool from the Web. Develop CGI scripts to interface with the Web server and write a telephony service provider for Windows NT platform using VC++. Knowledge of Visual C++, Visual Basic, C++, Multi-thread Programming, Object Oriented Design, SOL and CGI. Bachelor of Science in Computer Engineering or foreign equivalent and 2 yrs. exp. or 2 yrs. exp. as a Software Engineer. M-F, 9-5, 40 hrs/wk., \$68,000.00 per yr. Send 2 resumes to Case # 19981951, P.O. Box 8968, Boston, MA 02114.

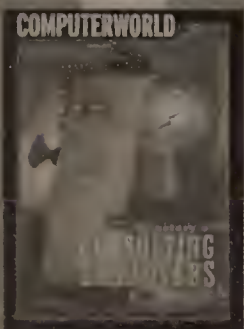
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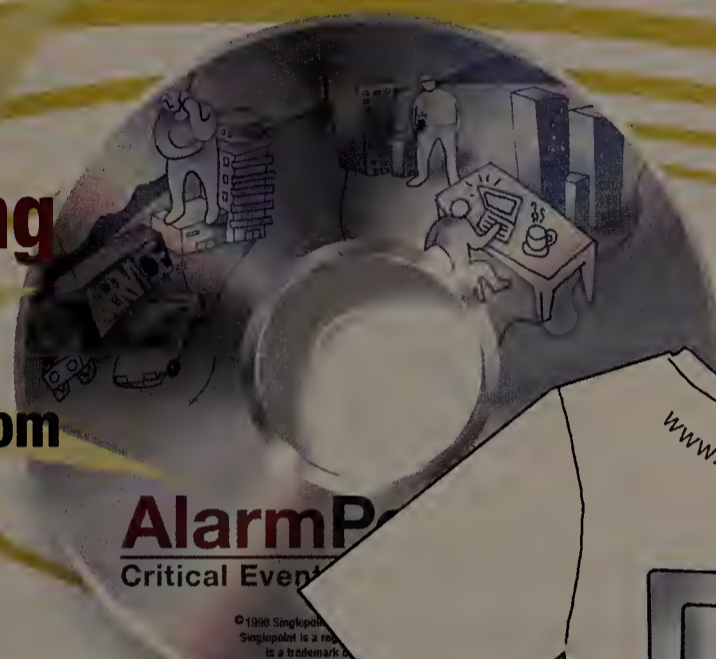
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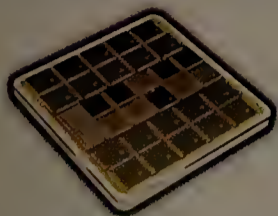


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## GAINERS ↑

## PERCENT

Maxtor Corp. (H)	23.6
Infomatrix Corp. (H)	21.6
Cadence Design Systems	21.0
eBay Inc. (H)	20.7
Edify Corp.	20.3
Prodigy Communications (H)	18.5
eToys Inc. (H)	15.9
Compuware Corp.	15.4

## DOLLAR

eBay Inc. (H)	20.25
Amazon.com Inc.	14.06
Qualcomm Corp. (H)	14.00
Yahoo Inc.	10.50
Infomatrix Corp. (H)	10.00
Sony Corp. (H)	7.94
Gateway (H)	7.69
Adobe Systems Inc. (H)	7.25

## LOSERS ↓

## PERCENT

Sprint Corp.	-18.6
Red Hat Inc. (H)	-18.3
Ariba Inc. (H)	-16.9
Applied Materials	-11.4
Rational Software Corp.	-10.0
Entrust Technologies Inc. (H)	-9.1
Tibco Software Inc. (H)	-8.8
CBT Group Plc.	-8.7

## DOLLAR

Ariba Inc. (H)	-21.44
Red Hat Inc. (H)	-15.63
Sprint Corp.	-10.13
Juniper Networks Inc. (H)	-8.69
Applied Materials	-8.06
Teradyne	-6.06
Ameritech Corp.	-5.69
MCI Worldcom Inc.	-4.38

## Technology IPOs on Record-Setting Track

Majority of the offerings are Internet-related

BY STEWART DECK

**1996** MAY HAVE been a record-setting year for technology start-ups going public. But then came 1999.

Through the end of last month, 199 initial public offerings (IPO) of technology companies have hit the market. That's more than halfway to the 371 that did so in 1996, when the first early wave of now well-known Internet companies — including Yahoo Inc. in Santa Clara, Calif., and Netscape Communications Corp. — popped onto the market.

Of course, not every IPO takes off. Both Quotesmith.com Inc., an online insurance quote service in Darien, Ill., and online florist 1-800-Flowers.com Inc. in Westbury, N.Y., fell in their first day of trading this month and are still below their opening offering prices of \$21 and \$11 per share, respectively.

## INDUSTRY ALMANAC

"The dominant issue this year has been Internet IPOs flooding the marketplace with offerings over the first half [of 1999], probably four times more than in previous years," said Ken Andersen, an analyst at Technologic Partners, a New York-based publishing and services tracking firm.

Andersen said this flood has been driven by a renewed thirst for Internet stocks. "There's so much money going into the public market for [already established] Internet stocks that it drives others" to join the fun, he said. The market has also been driven by investors who have pumped money into many of the companies with an e-commerce component, he added.

A scan down the list of this year's technology IPOs shows that the overwhelming majority have been Internet-related, with close to 10% of the total sporting a dot.com company name. Some of the more familiar names include online toyseller eToys Inc. in Santa Monica, Calif., online ticketing and car seller Priceline.com Inc. in Stamford, Conn., Internet map provider MapQuest.com Inc. in New York and Value America Inc., the giant online high-tech store in Charlottesville, Va. (see chart).

But it hasn't been exclusively an Internet year. Infomatrix Corp., a Palo Alto, Calif.-based provider of data warehousing technology, went public in late April, as did Marimba Inc., the Mountain View, Calif., developer of push technologies. And Be Inc. in Menlo Park, Calif., the developer of a snazzy operating system that Apple Computer Inc. once courted for its own machines, just went public late last month. ▶

## IPO Fever

A sampling of 1999's IPOs:

COMPANY	OPENING PRICE	AUG. 18 PRICE
Value America	23	13 1/8
Infomatrix	16	55
Media Metrix	17	47 7/16
eToys	20	45 3/16
Ariba Inc.	23	110 7/16

EXCH 52-WEEK RANGE AUGUST 20 2 PM WK NET CHANGE WK PCT CHANGE

## SOFTWARE UP 1.0%

AOBE	96.93	23.62	Adobe Systems Inc. (H)	96.63	7.25	8.1
ARBA	138.06	61.00	Ariba Inc. (H)	105.06	-21.44	-16.9
AZPN	31.00	6.12	Aspen Technology Inc.	9.13	-0.06	-0.7
ADSK	49.43	21.82	Autodesk Inc.	23.56	-0.56	-2.3
AVIO	37.12	11.06	Avid Technology	12.56	-0.13	-1.0
BMCS	64.87	30.00	BMC Software Inc. (H)	54.13	-2.88	-5.0
BDBJ	49.50	6.12	Business Objects S.A.	45.44	-0.81	-1.8
CON	36.00	9.12	Cadence Design Systems	11.88	2.06	21.0
CBTSY	60.00	6.68	CBT Group Plc.	23.63	-2.25	-8.7
CHKP	73.31	10.87	Checkpoint Software Tech.	68.63	1.13	1.7
CTXS	65.25	23.12	Citrix Systems Inc.	51.63	-2.25	-4.2
COGN	28.12	14.75	Cognos Inc.	20.25	-0.13	-0.6
CA	58.00	26.00	Computer Associates Intern'l Inc.	49.06	1.00	2.1
CPWR	40.00	16.37	Compuware Corp.	30.38	4.06	15.4
OCTM	54.12	9.37	Documentum	14.88	-0.06	-0.4
EFII	60.37	14.12	Electronics For Imaging	58.00	2.88	5.2
HNCS	45.62	13.75	Hnc Software	36.94	2.44	7.1
HYSL	37.37	9.87	Hyperion Software (H)	17.25	-1.06	-5.8
IOXC	54.50	12.43	IDX Systems	21.00	2.06	10.9
INFA	64.50	19.00	Informatica Corp. (H)	56.25	10.00	21.6
INTU	14.00	3.50	Informix Software Inc.	7.00	0.00	0.0
INTU	110.75	34.18	Intuit	80.00	0.38	0.5
JKHY	55.00	26.43	Jack Henry Associates	40.44	-1.03	-2.5
JDEC	49.50	10.87	J.D. Edwards & Co.	15.31	-0.06	-0.4
LGTD	41.50	13.75	Legato Systems Inc. (H)	39.56	2.94	8.0
MACR	53.25	12.31	Macromedia Inc.	37.00	3.13	9.2
MANU	23.75	5.25	Manugistics Group Inc.	13.13	1.63	14.1
MENT	15.06	5.43	Mentor Graphics	8.69	0.44	5.3
MSFT	100.75	43.87	Microsoft Corp.	83.94	-0.03	0.0
NETA	67.68	10.06	Network Associates	16.38	-0.13	-0.8
GMH	63.87	30.37	Network General	51.69	-0.81	-1.5
NOVL	30.50	7.43	Novell Inc. (L)	25.00	0.00	0.0
ORCL	41.18	12.25	Oracle Corp.	36.56	-1.69	-4.4
PMTC	22.25	8.50	Parametric Technology Corp.	13.88	-0.56	-3.9
PSFT	36.37	11.50	PeopleSoft Inc.	14.06	-0.19	-1.3
PIXR	53.75	27.50	Pixar	37.00	-0.63	-1.7
RATL	40.00	10.50	Rational Software Corp.	28.75	-3.19	-10.0
RHAT	90.68	40.00	Red Hat Inc. (H)	69.63	-15.63	-18.3
SAP	56.62	23.75	SAP AG	32.63	0.75	2.4
SCUR	29.00	2.25	Secure Computing Corp.	3.00	-0.06	-2.0
SE	46.43	19.00	Sterling Commerce Inc.	20.56	-0.06	-0.3
SSW	30.62	18.56	Sterling Software Inc.	21.25	-0.94	-4.2
SORC	23.43	7.50	Structural Dynamics Research	16.88	0.44	2.7
SYBS	13.37	4.50	Sybase Inc.	11.38	0.19	1.7
SYMC	32.25	8.68	Symantec Corp.	27.88	-0.81	-2.8
SNPS	63.25	24.50	Synopsis	56.38	-2.69	-4.6
SCTC	22.06	7.81	Systems & Computer Technology	16.25	0.81	5.3
BAANF	36.50	6.87	The Baan Co. N.V.	13.94	0.94	7.2
VNTV	15.81	5.00	The Vanille Corp.	8.75	0.00	0.0
TIBX	41.37	19.75	Tibco Software Inc. (H)	22.81	-2.19	-8.8
TSAI	51.00	26.00	Trans. Sys. Arch.	33.31	2.25	7.2
VRTS	63.43	11.87	Veritas Software Corp.	55.50	3.75	7.2
WIND	34.43	11.25	Wind River Systems Inc.	15.13	0.31	2.1

## TELECOMMUNICATIONS CARRIERS OFF -1.2%

AT	75.00	40.18	Alltel Corp.	69.81	-1.19	-1.7
AIT	77.25	43.37	Ameritech Corp.	67.00	-5.69	-7.8
ANDW	22.87	10.37	Andrew Corp.	19.31	0.31	1.6
T	64.12	32.25	AT&T Corp.	46.56	-2.19	-4.5
BCE	52.68	25.62	BCE Inc.	46.75	-1.06	-2.2
BEL	66.93	40.62	Bell Atlantic	61.56	-2.81	-4.4
BLS	51.37	32.12	Bell South	47.63	-0.50	-1.0
CSN	26.50	8.50	Cincinnati Bell Inc.	18.75	-1.13	-5.7
CMCSK	42.56	16.81	Comcast	35.69	1.13	3.3
CQ	39.62	21.75	Comsat Corp.	36.56	1.31	3.7
COX	44.43	20.75	Cox Communications Inc.	37.38	2.31	6.6
GSTRF	33.00	8.31	Globalstar Telecom. Ltd.	29.88	1.63	5.8
GTE	78.50	46.56	GTE Corp.	71.88	-3.38	-4.5
NXTL	59.81	15.37	Nextel Communications (H)	56.81	3.63	6.8
SPDT	52.50	26.37	Panamsat	35.19	-1.16	-3.2
QCDM	174.43	18.87	Qualcomm Corp. (H)	170.44	14.00	8.9
SBC	59.93	35.00	SBC Communications	52.06	-4.19	-7.4
FON	57.43	27.18	Sprint Corp.	44.25	-10.13	-18.6
TDS	79.37	30.62	Telephone and Data Systems	67.81	0.06	0.1
TNI	33.75	12.00	Transation Network Services (H)	28.63	0.63	2.2
USW	66.00	47.00	US West	55.56	0.50	0.9
VIA	48.75	24.62	Viacom	40.81	-1.63	-3.8
WCII	64.43	10.25	Winstar Communications Inc.	45.75	0.25	0.5
WCDM	96.75	39.00	MCI Worldcom Inc.	74.19	-4.38	-5.6

## SERVICES UP 0.4%

ACXM	31.25	16.50	Acxiom Corp.	21.94	1.13	4.9
ACS	53.00	22.37	Affiliated Computer Servs	44.00	-1.38	-3.0
AMSY	40.25	19.25	American Mgt. Systems	28.69	-0.31	-1.1
AUO	46.87	31.75	Automatic Data Processing	39.75	-0.75	-1.9
BSYS	60.87	35.37	Bisys Group Inc.	49.38	-2.13	-4.1
CATP	45.25	10.62	Cambridge Technology Ptnrs	14.38	-1.19	-7.6
CEN	40.50	24.00	Ceridian	29.44	1.63	5.8
CBR	34.75	13.31	Ciber Inc.	19.38	-0.50	-2.5
CDD	30.87	10.75	Comdisco	22.44	1.88	9.1
CHRS	37.87	9.25	Computer Horizons Corp.	13.81	0.88	6.8
CSC	74.87	46.25	Computer Sciences	64.25	-1.50	-2.3
DST	70.25	34.00	Dst Systems Inc.	68.31	0.69	1.0
EDS	67.37	30.43	Electronic Data Systems	56.25	-3.19	-5.4
FOC	51.50	19.68	First Data Group	45.75	-2.00	-4.2
FISV	40.75	24.62	Fiserv	28.50	-0.31	-1.1
IT	28.81	17.31	Gartner Group	22.44	1.50	7.2
KEA	58.25	17.25	Keane	22.88	-0.75	-3.2
NDC	55.25	26.18	National Data	41.50	1.31	3.3
PAYX	36.75	23.56	Paychex Inc.	26.63	-0.63	-2.3
PER	65.75	19.18	Perot Systems Corp. (H)	22.06	2.06	10.3
REGI	15.12	4.00	Renaissance Worldwide	5.44	-0.47	-7.9
REY	25.31	12.62	Reynolds & Reynolds	22.13	0.25	1.1
SFE	120.00	17.12	Salegard Scientifics	55.81	2.38	4.4
SAPE	82.87	24.25	Sapient Corp.	65.00	3.63	5.9
SMS	73.50	40.06	Shared Medical Systems	58.00	-3.88	-6.3
SOS	41.93	21.68	Sungard Data Systems	27.56	0.75	2.8
SYNT	24.31	7.00	Syntel Inc. (L)	10.75	0.75	7.5
TECD	53.12	14.50	Tech Data	31.56	-1.06	-3.3
TSS	26.25	14.43	Total System Services. Inc.	16.00	0.13	0.8
TSAL	51.00	26.00	Transaction Sys. Architects	33.31	2.25	7.2

## NETWORK UP 0.7%

DMS	51.12	20.00	3Com Corp.	23.44	0.44	-1.8
ADCT	53.62	15.75	ADC Telecommunications Inc.	40.94	-2.81	-6.4
ANTC	46.50	11.50	Antec (H)	42.31	-1.69	-3.8
BNYN	19.37	2.12	Banyan Systems Inc.	7.88	0.81	11.5
CS	16.31	6.62	Cabletron Systems	13.94	0.13	0.9
CNEBF	12.37	3.93	Call Net Enterprises	5.53	0.41	7.9
CSCD	69.25	20.56	Cisco Systems Inc.	63.50	0.50	0.8
ECIL	45.00	19.75	ECI Telecom	30.44	2.13	7.5
ENTU	43.06	9.00	Entrust Technologies Inc. (H)	27.00	2.69	9.1
HRS	40.62	27.31	Harris Corp.	27.81	-0.88	-3.1
GMH	63.87	30.37	Hughes Electronics/GM	51.69	-0.81	-1.5
ERICY	34.12	15.00	LM Ericsson	32.81	2.06	6.7

EXCH 52-WEEK RANGE AUGUST 20 2 PM WK NET CHANGE WK PCT CHANGE

JNPR	223.87	90.12	Juniper Networks Inc. (H)	205.08	8.89	4.1
LU	79.75	26.68	Lucent Technologies	83.81	-2.31	-3.5
MADGF	5.18	1.75	Madge Networks	2.63	0.13	4.5
NCDI	8.50	4.25	Network Computing Dev.	4.88	0.13	2.6
NWK	15.12	7.31	Network Equipment Tech.	9.00	0.08	0.7
NN	39.87	15.43	Newbridge Networks	26.25	0.31	1.2
NDK	99.37	29.50	Nokia Corp.	83.63	-2.31	2.7
NT	47.06	13.41	Northern Telecom Ltd.	43.06	0.25	0.6
PAIR	16.12	6.00	Pairgain Technologies Inc.	9.91	-0.22	-2.2
PCTL	11.00	4.31	Picturatel	5.13	0.00	0.0
SFA	47.37	11.75	Scientific Atlanta (H)	48.06	1.38	3.1
TLA8	74.00	15.68	Tellabs Inc.	81.38	-8.36	-10.5
USW	66.00	47.00	US West	55.56	0.50	0.9
VRK	7.50	2.00	Verilink	2.31	0.19	8.8
WSTL	11.18	2.75	Westell Technology Inc.	8.19	0.89	9.2

## SEMICONDUCTORS, CHIPS &amp; EQUIPMENT OFF -2.6%

ADPT	42.87	7.87	Adaptec	34.50	-0.44	-1.3
AMD	33.00	9.31	Advanced Micro Devices	18.00	-0.69	-3.7
ALTR	46.87	14.56	Altera	40.56	-1.13	-2.7
AOI	51.00	12.00	Analog Devices	45.50	-2.25	-4.7
AMAT	79.93	21.56	Applied Materials	62.50	-4.06	-11.4
ASML	69.62	12.93	ASML Lithography Holding	58.50	-1.25	-2.1
HRS	40.62	27.31	Harris Corp.	27.81	-0.88	-3.1
INTC	79.81	34.87	Intel Corp. (H)	78.25	-0.56	-0.7
KLAC	73.06	20.75	Kla Instruments	61.50	-3.44	-5.3
LLTC	75.75	19.56	Linear Technology	61.94	-3.06	-4.7
LSI	58.87	10.50	LSI Logic (H)	55.81	-1.19	-2.1
MXIM	73.50	22.31	Maxim Integrated Products	67.13	-2.19	-3.2
MU	80.56	20.25	Micron Technology	64.69	2.06	3.3
MDT	100.18	38.37	Motorola Inc.	88.00	-4.06	-4.4
NSM	47.12	13.50	National Semiconductor (H)	29.63	1.81	6.5
STM	78.62	17.93	SGS-Thomson Microelectronics	70.88	-3.81	-5.1
SLR	74.75	19.37	Solentron Corp. (H)	71.44	-0.81	-1.1
TER	80.56	15.00	Teradyne	64.19	-6.06	-8.6
TXN	77.68	22.68	Texas Instruments (L)	73.94	-0.38	-0.5
JOSU	99.38	15.62	Uniphase (H)	99.38	3.63	3.8
VTSS	73.87	17.12	Vitesse Semiconductor Corp	68.13	-3.56	-5.0
XLNX	74.25	14.87	Xilinx (H)	71.13	-0.13	-0.2

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## CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

**Editor in Chief** Maryfran Johnson (508) 820-8179  
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## DEPARTMENT EDITORS

**News Editors** Michael Goldberg (508) 620-7789  
 Anne McCrory (508) 820-8205  
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**Security, encryption, viruses** Ann Harrison (508) 820-8182  
**IT management, year 2000, financial services** Thomas Hoffman (914) 988-9630

**E-commerce, business, energy/utilities** Julia King (610) 532-7599  
**Network, systems management, food industry, retail and restaurant** Sami Lais (301) 270-1427  
**Microsoft, investigative reports** Kim S. Nash (773) 871-3035  
**Computerworld online** Kathleen Dhison (508) 820-8215  
**Application development, Linux, desktop applications, retailers** David Orenstein (650) 524-7116  
**Java, intranets, E-commerce technologies, pharmaceutical industry** Carol Siwa (508) 628-4731  
**Databases and Unix operating system** Robin A. Robinson (E-mail: [robin.robinson@computerworld.com](mailto:robin.robinson@computerworld.com))  
 Craig Stedman (508) 820-8120  
**Client/server software, Unix applications, process manufacturing** Patrick Thibodeau (202) 333-2448  
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**Midrange and mainframe hardware, heavy manufacturing**

## OPINIONS

**Staff Columnist** Frank Hayes (503) 252-0100  
**Columns Editor** Allan E. Alter (508) 620-7714

## FEATURES EDITORS

**IT management, leadership** Allan E. Alter (503) 620-7714  
**IT management, year 2000** Rick Saia (508) 820-8118  
**Field Report** James Connolly (508) 820-8144  
**Executive Technology** Cathleen Gagne (508) 620-7729  
**Reviews** Russell Kay (508) 820-8175  
**Field Report, reviews, Emerging Companies** Cynthia Morgan (508) 820-8177  
**IT Careers** David B. Weldon (508) 820-8166  
**IT Careers** Mari Keefe (508) 628-4906  
**QuickStudy** Stefanie McCann (508) 820-8274  
**Special Projects** Amy Malloy (508) 620-7754

## FEATURES WRITERS

**IT management** Kathleen Melymuka (508) 628-4931  
**Business, technology topics** Gary H. Anthes (202) 347-0134

## RESEARCH

Lorraine Cosgrove, **research manager**; Laura Hunt, **librarian, research analyst**; Keith Shaw, **graphics coordinator**

## CDPY OESK

Jamie Eckle, **managing editor/production** (508) 820-8202;  
 Jean Consilvio, **assistant managing editor/production**;  
 Pat Hyde, **assistant managing editor/special projects**;  
 Jacqueline Day, Julie Oennis,  
 Bob Rawson, **copy editors**.

## GRAPHIC DESIGN

Tom Monahan, **design director** (508) 820-8218; Stephanie Faucher, **art director/features**; Mitchell J. Hayes, **art director/news**;  
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**associate art directors**; Julie E'Errico, **graphic designer**;  
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## ADMINISTRATIVE SUPPORT

Linda Gorgone, **office manager** (ext. 8176);  
 Connie Brown (ext. 8178); Lorraine Witzell (ext. 8139);  
 Chris Flanagan (650) 524-7111, **editorial assistants**.

## COMPUTERWORLD ONLINE

Johanna Ambrosio, **director**;  
 Sharon Machlis, **online news editor** (508) 820-8231;  
 Kathleen Dhison, **reporter** (508) 820-8215; Jeremy Selwyn,  
**online services manager**; Oavid Ramel, **online production coordinator**;  
 John Pallozzi, **Web developer**; Lisa Davidson, **online researcher**;  
 Aaron Bishop, **audio engineer**.

## CONTRIBUTING COLUMNISTS

Joe Auer, James Champy, John Gantz, Peter G. W. Keen,  
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## Internet Patents

online buyers set the price they're willing to pay and sellers bid for their business. What differentiates the process from a traditional request for proposal is that it occurs online.

Another is Home Account, which provides outsourced Internet banking services to Bank America, Ameritrade and other corporate customers. It holds a total of about 400 Web-related patents, including one for the process of combining certain types of brokerage and mortgage accounts, then selling them online.

"Our patents are around the delivery of services," said Home Account CEO Chuck White. They're also a key source of increased revenue for the Emeryville, Calif., firm because banks that want to offer the same online services would need to go through Home Account to do so.

But that's assuming the company's patents are enforceable, which is a big if, according to several experts.

"In my opinion, the patents are worthless," said Vernon Keenan, an Internet analyst at Keenan & Associates Inc. in San Francisco. He also noted that because patent holders such as Open Market Inc. (see chart) have so far done little, if anything, to enforce their monopolies, "IT managers and entrepreneurs shouldn't be afraid of patents. They can safely ignore them."

Patent attorneys also have their doubts about the flurry of new Web patents. "People have to be aware that a lot of the patents at issue are probably not going to stand up in court," said Bary Rein, a patent attorney and partner at New York law firm Pennie & Edmonds. One of the primary reasons, he said, is that the standard the patent office uses for Web-related patents is "pretty low."

Still, other analysts said they believe that many of the Internet patents should never have been issued because they grant very broad protections for business processes, such as on-

line ordering with a credit card, that can be executed in only a limited number of ways.

"Instead of patenting, what they should be doing is trade-marking brands," said Steve Telleen, an e-commerce analyst at Cambridge, Mass.-based Giga Information Group Inc.

Antoine Toffa, CEO at Denver-based Trip.com Inc., which holds a provisional patent for software technology and processes related to online comparative shopping, said he agrees — up to a point.

Companies like Priceline.com shouldn't be granted patents for moving traditional business methods to the Internet, Toffa said.

"We feel, like many other companies, that the patent isn't enforceable because it doesn't include technology. It's for a business process that existed all along," Toffa said.

By contrast, Trip.com's patent covers an online shopping process plus all of the software code that went into its Intelitrip technology, which sifts through huge volumes of airfare data to present users with the lowest fares.

As for enforcing its patent, Toffa said the onus lies with Trip.com and would be fairly straightforward. "First, we'd look at the online travel industry to see if anyone is doing the same thing. We already have a

unit that scans for what competitors are doing," he said.

Another somewhat ironic option, he said, would be to hire one of an emerging breed of investigative services that conduct searches of sites for possible patent infringements.

Some firms will do that for a fee, he said, proving that "there's always an opportunity somewhere for someone to make money on the Internet." ▀

## A Patent Sampler

Here's a sampling of patents — some approved, some still pending — for online versions of real-world business practices and methods:

- **Priceline.com Inc.:** Received a patent for a method of buying and selling goods at auction.
- **Open Market Inc.:** Received a patent for a method of buying and paying for goods online (electronic shopping-cart concept).
- **Netcentives Inc.:** Received a patent for online frequent-buyer program.
- **IWant.com:** Patent pending for method of referring customers to sellers who have the products they want to buy.
- **Cybersettle.com:** patent pending for online settlement of legal disputes. Litigants submit settlement offers to a password-protected site.

— Julia King

Continued from page 1

## Home Depot

The new applications expand on Home Depot's heavy investment in the Java programming language, which it has used to develop systems for things such as renting tools and preparing retail sales reports for district managers.

And the development comes at a time when Home Depot is finally ready to start rolling out Expo Design Centers on a wider scale after testing and refining the showroom concept for the past eight years. The company has opened four Expo stores since April, and

last week it announced plans to increase the number of design centers from 12 now to 26 next year and 200 by 2005.

Until now, most of the front-line work in the Expo centers was done manually — a situation that was "a real nightmare," said Curtis Chambers, a manager in Home Depot's infrastructure technology group.

### Paper Catalogs Out

To order flooring, bath fixtures, appliances and other items for customers, workers had to flip through paper catalogs and then enter special purchase orders into Home Depot's retail ordering system, Chambers said.

That worked, "but it was

kind of like taking a square peg and filing it down to fit into a round hole," he said. "The retail system wasn't built to handle the number of [nonstock] orders that Expo creates."

Meanwhile, interior designers and project coordinators who supervise installations had to use file folders and pieces of paper to keep track of things, said Michelle Valvo, development team leader for the project-tracking application.

And at the design centers, she said, "the whole key is the follow-up with customers." Now, room measurements and installation schedules get entered into the tracking system. Products can be viewed and ordered directly from the new order-entry application.

The Java-based programs run on PCs or thin clients and connect to Home Depot's in-store Unix systems and corporate mainframes via application server software from Novera Software Inc. in Burlington, Mass. The application server software conforms to the Common Object Request Broker Architecture for distributed computing.

Plans call for the applications to be installed at all the existing design centers by year's end. Chambers wouldn't disclose how much it cost to develop the software, but he said each application took about 50 man-months to finish.

Home Depot was one of the first companies to make a big

commitment to working with Java. Chambers said the company looked at packaged software for the new applications, such as calendaring systems that could track projects. "But most of the stuff we're doing is unique," he said.

### JUST THE FACTS

## Retail Javas

Home Depot's new design centers

**What they are:** Stand-alone stores that include interior-design showrooms and workers who can plan and coordinate home-improvement projects for customers.

**New IT needs:** Java-based applications for viewing products, creating purchase orders for customers and tracking the progress of projects.

**Software status:** Project-tracking system to be installed at all 12 existing stores by October, the order-entry application by year's end.

The design center format puts Home Depot "into a whole different area that its existing infrastructure wasn't designed to meet," said Donald Bellomy, a retail industry analyst at Aberdeen Group Inc. in Boston. "They're selling what is essentially a service, not high-volume products."

The first Expo center opened in 1991, but Chambers said Home Depot didn't begin planning the new applications until last summer while the showroom concept was refined at a handful of stores. "None of the [original] stores look anything alike," he said. ▀

## Retailer Puts Online Project on Hold

Home Depot last week said it's dropping plans to start selling a limited number of products online this fall after being told by professional builders that the initial offering of 1,000 products wouldn't be broad enough.

Instead, the home-improvement retailer will now focus on making a much wider array of items available on its Web site ([www.homedepot.com](http://www.homedepot.com)) by mid-2000.

Home Depot launched a remodeled version of the Web site in late June and said it was moving ahead with the limited-offering plans. But after getting feedback from builders — who account for about 30% of sales at its stores — the company decided it was better to wait "than to do kind of a halfway job," a spokeswoman said.

Gift cards that can be used as cash at stores will now be the only item sold online this year. But at least 50,000 products should be available by next June, she said.

The delay "isn't the negative it would be in other businesses," said Donald Bellomy, an analyst at Aberdeen Group in Boston. For a company like Home Depot, he said, "the most important thing is to make sure you do this right in a way that fits your customers." — Craig Stedman



FRANK HAYES/FRANKLY SPEAKING

# The 411 on Y2K

**D**R. EDWARD YARDENI is my favorite year 2000 doom-sayer. I like Dr. Ed because he collects truckloads of Y2K information (you can peruse it yourself at [www.yardeni.com](http://www.yardeni.com)) and analyzes it with the rigor and vigor you'd expect from the chief economist for Deutsche Bank Securities. Yardeni thinks Y2K problems will cause a global recession. Specifically, he figures a 25% chance of a six-month recession, a 40% chance of a yearlong recession, a 5% chance of a Y2K depression and a 30% chance nothing much will happen. (Those really aren't bad odds, though — only 2-to-1 in favor of any downturn at all and better than even odds of nothing worse than a modest slump.)

But Dr. Ed gets the doomsayer label because most other economists pooh-pooh the idea of any Y2K recession at all. Just last week, the National Association for Business Economics (NABE) reported a survey of 181 members, and only one named Y2K as the most serious economic problem facing the U.S. today. (The big threats, say NABE economists, are an overheated stock market and a poorly prepared labor force.)

Gartner Group issued its own year 2000 forecast last week, pronouncing things in pretty good shape. "In the United States, we don't expect any real significant problems to the public at all" on Jan. 1, said Lou Marcoccio, Gartner's top Y2K analyst. "The day probably will go by somewhat unnoticed, except for the panic issues." Gartner also believes there won't be a recession.

The Gartner report came out three days after a General Accounting Office official told a congressional hearing that federal, state and local governments all still have lots of Y2K work to do. But as it happens, 79% of those business economists from NABE said the federal government was in fine Y2K shape, and 67% said state and local governments were Y2K OK.

Do any of these people know what they're talking about? Well, yes — some of them, some of the time. And if you can slice through the contradictory predictions for your top management, you can provide a real service — and maybe prove that your IT shop deserves some respect in understanding both technology and business issues.

After all, IT should own Y2K. We know the technical issues better than anyone. But we should also be our organizations' best source for Y2K business information — threshing out the useful facts from the chaff. If we can't do that, how do we get away with claiming a clue about any other business issue?

Some of that threshing is easy. For example, it's not tough to see that the GAO official is in a position to know government agencies still have lots of Y2K work to do; the economists are just guessing, based on what they've heard or read.

What about Gartner's claim that Jan. 1 will pass "somewhat unnoticed"? It's unsupported — another guess. The electricity will still be on for most Americans, but whether retailers, fast-food joints and emergency services will be doing business as usual is simply unknown.

A Y2K recession? Better to pass all the predictions — Yardeni, NABE, Gartner — along to your top management. They'll draw their own conclusions.

But whatever you do, make sure they know. Gather and winnow all the Y2K information you can get — on the economy, your supply chain, your industry, your customers. Shoot down myths. Point out which claims

are supported. Give your executives the best, most conclusive evidence you can.

If IT doesn't explain Y2K to them, who will? ▀

Hayes, Computerworld's staff columnist, has covered IT for 20 years. His e-mail address is [frank\\_hayes@computerworld.com](mailto:frank_hayes@computerworld.com).

You need  
to be your  
organization's  
best source for  
Y2K business  
information.



## SHARK TANK

**GERMAN HOSPITALITY** So you decide to spend a couple of days at Sapphire 9, the big SAP hoedown being held next month in Philadelphia. You register online. Here's what comes back: Teutonic e-mail informing you that SAP has a "special registration approval system" this year, your registration will be "reviewed by a designated SAP representative" and you can just twiddle your thumbs until you're told whether you made the cut. Sheesh, all this for a trip to Philly?

**GREAT TITLES DEPARTMENT** The CIA has a new CIO. Really. Central Intelligence Agency Chief Information Officer. John Young gets to put that on his business card. Mike Nugent, CIO at Shurline International in Northlake, Ill., passed that one along and said, "I think I would take a cut in pay to have a title like that."

**GOT NT ON ALPHA?** Then get set for hard times. Sharky hears rumors that Compaq is about to slice the Bellevue, Wash.-based Alpha-Windows NT development staff it inherited when it swallowed Digital. Compaq refuses to confirm or deny, but the newsletter "Shannon Knows Compaq" speculates NT could soon be replaced by Linux as the Alpha operating system of third choice.

**HART SCIENTIFIC INSTRUMENTS**, out of American Fork, Utah, makes thermometers and

other measurement gear. The Shark had to chuckle at Hart's "absolutely unofficial" Y2K Web page, passed along by a couple of pilot fish, including John. Nice send-up of the usual Y2K pabulum. Sample: "Even if our accounting software stops working on Jan. 3, 2000, you can count on us finding a way to bill you for whatever you bought from us prior to Armageddon." Go to [www.hartscientific.com](http://www.hartscientific.com).

**TANKSTER NICK** worked years ago for a "slimy operator." As D-Day approached for a doomed project, Nick wisely wrote a CYA memo. So when "the train wreck occurred" and the clients fumed, he thought he was clear. But the boss denied knowledge of the memo — which had flat vanished. "Gone from my files, from the secretary's chronological files, from my system and from the server," our man reports. Guess what? Nick recently bumped into the company's (former) security manager, who, red-faced, admitted that late one night, the boss fast-talked his way into a private peek at Nick's files.

Bonus punch line: Nick long ago dubbed this boss "the two-legged shark." Hey, I resemble that remark! Want to fire off your own slimy-boss story? Let the world know about an empty suit masquerading as a top exec? Hit me: [sharky@computerworld.com](mailto:sharky@computerworld.com).

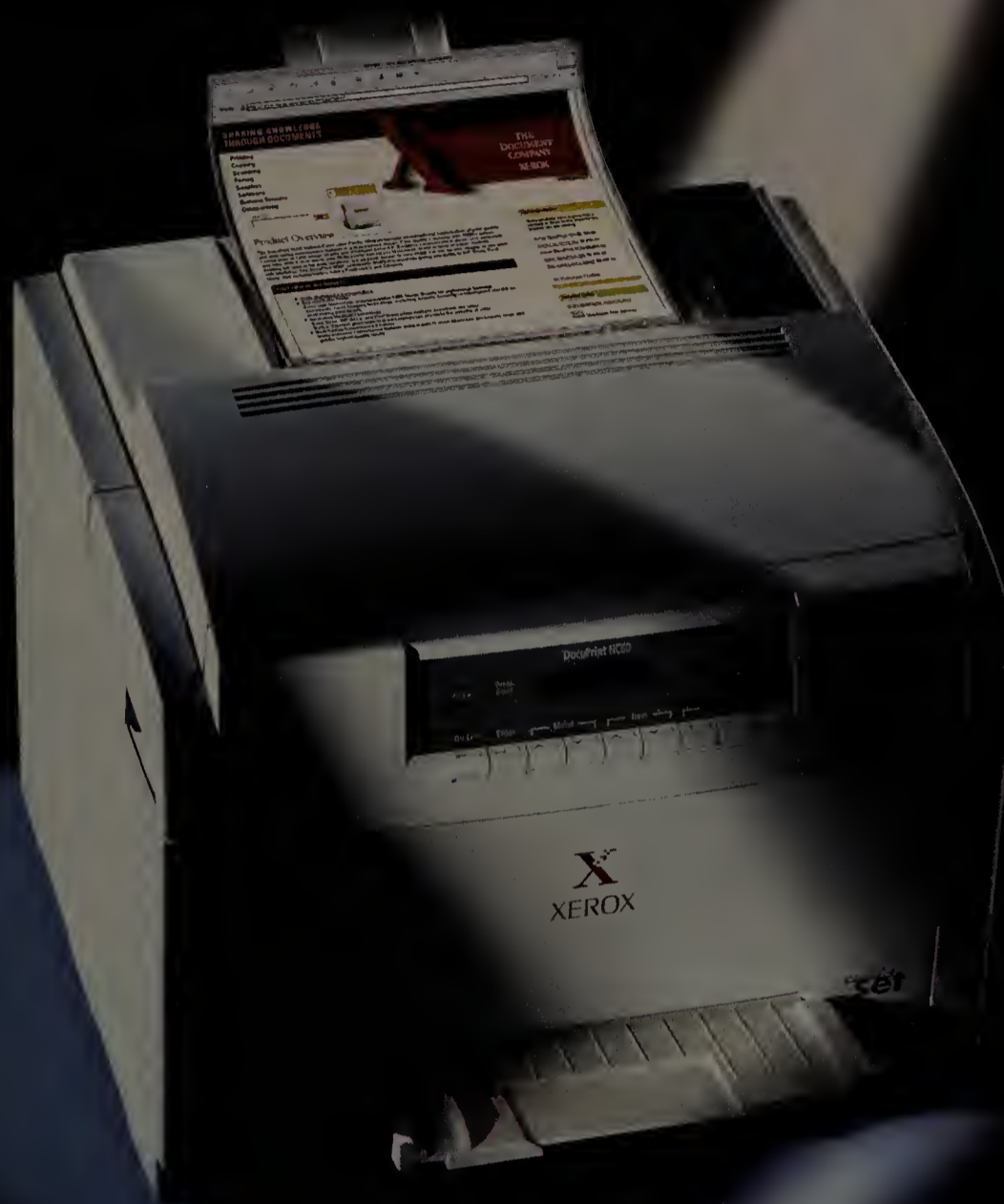
## The 5th Wave



"Oddly enough, it came with a PCI bus slot."

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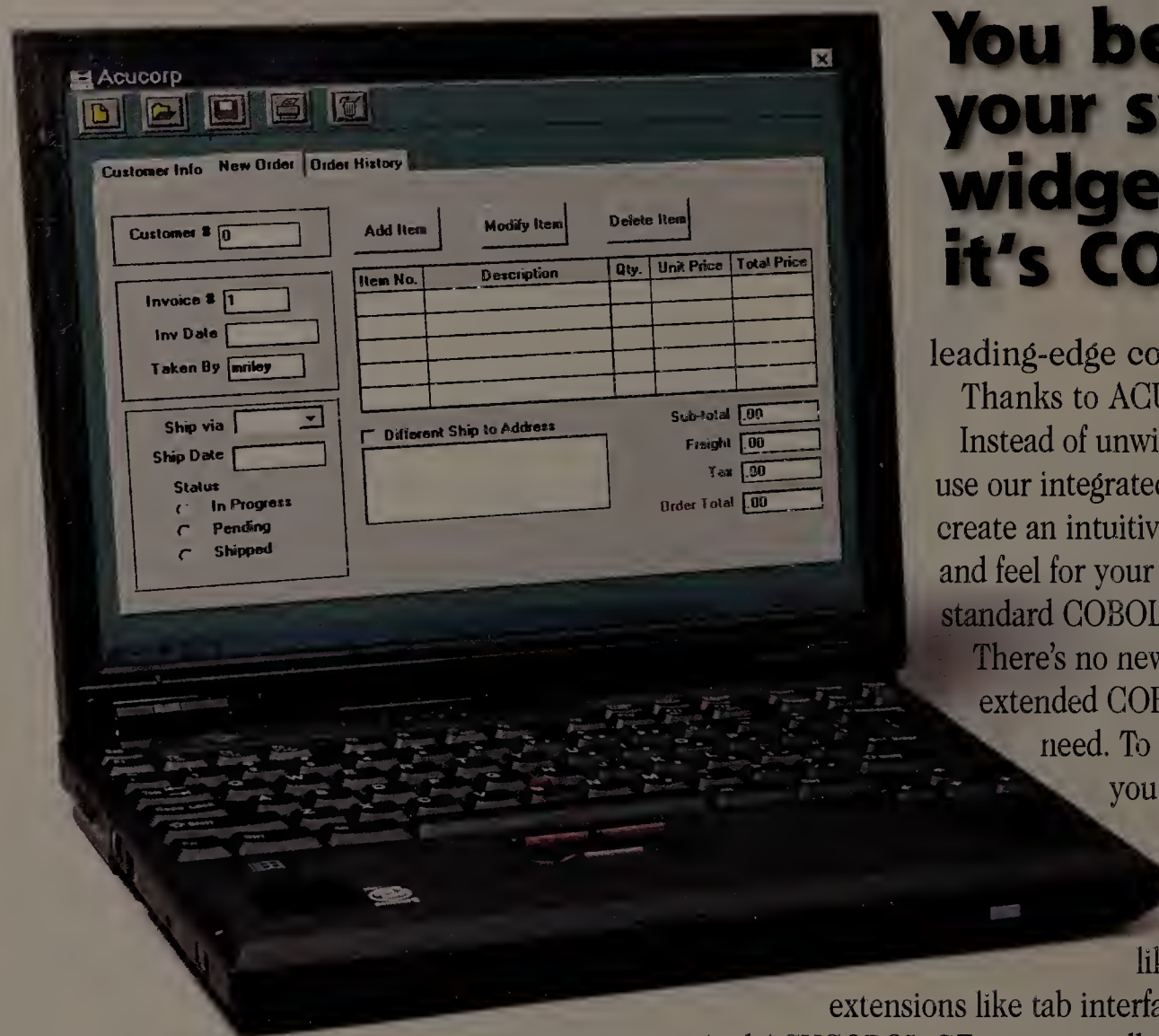
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[theNewCobol@acucorp.com](mailto:theNewCobol@acucorp.com)